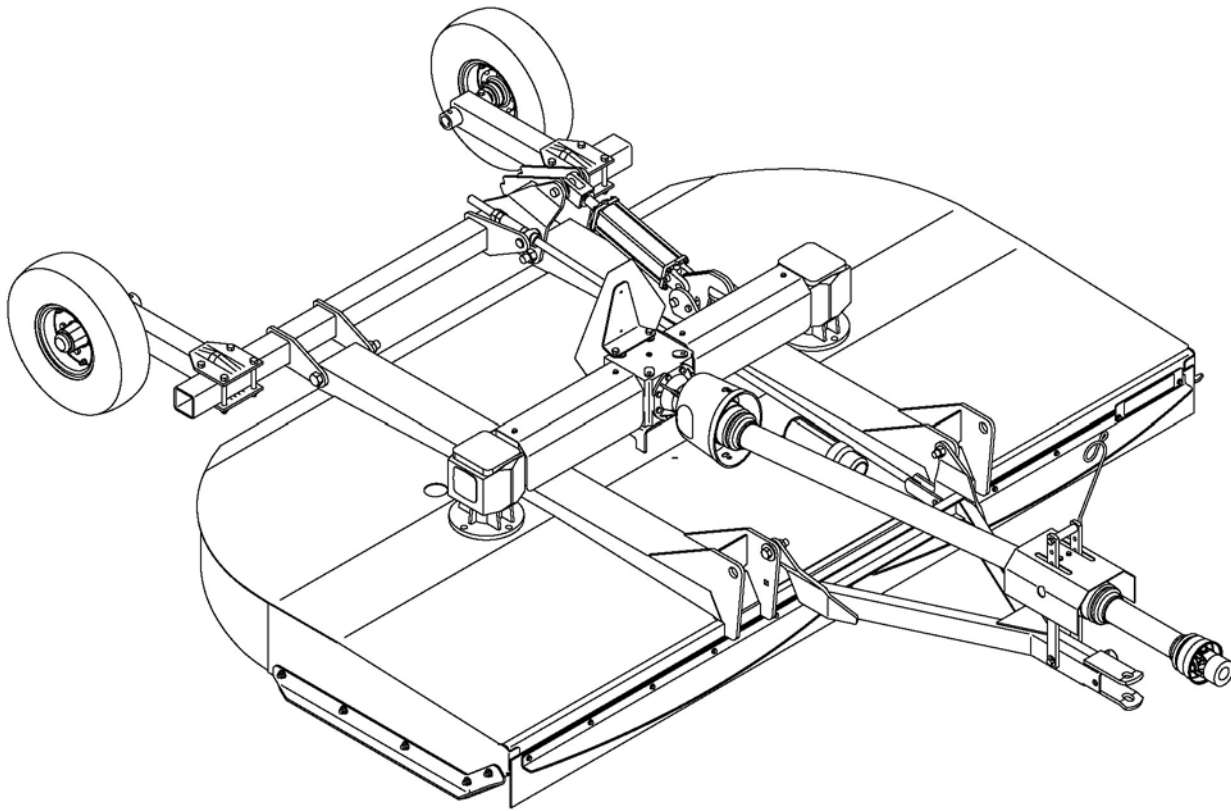


WOODS ROTARY CUTTER

DS96
DS120



MAN0390
(Rev. 5/5/2011)

WOODS®

OPERATOR'S MANUAL

TO THE DEALER:

Assembly and proper installation of this product is the responsibility of the Woods® dealer. Read manual instructions and safety rules. Make sure all items on the Dealer's Pre-Delivery and Delivery Check Lists in the Operator's Manual are completed before releasing equipment to the owner.

The dealer must complete the online Product Registration form at the Woods Dealer Website which certifies that all Dealer Check List items have been completed. Please contact your dealer to complete this form. Dealers can register all Woods product at dealer.WoodsEquipment.com under Product Registration.

Failure to register the product does not diminish customer's warranty rights.

TO THE OWNER:

Read this manual before operating your Woods equipment. The information presented will prepare you to do a better and safer job. Keep this manual handy for ready reference. Require all operators to read this manual carefully and become acquainted with all adjustment and operating procedures before attempting to operate. Replacement manuals can be obtained from your dealer. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.

The equipment you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require cleaning and upkeep. Lubricate the unit as specified. Observe all safety information in this manual and safety decals on the equipment.

For service, your authorized Woods dealer has trained mechanics, genuine Woods service parts, and the necessary tools and equipment to handle all your needs.

Use only genuine Woods service parts. Substitute parts will void the warranty and may not meet standards required for safe and satisfactory operation. Record the model number and serial number of your equipment in the spaces provided:

Model: _____ **Date of Purchase:** _____

Serial Number: (see Safety Decal section for location) _____

Provide this information to your dealer to obtain correct repair parts.

Throughout this manual, the term **NOTICE** is used to indicate that failure to observe can cause damage to equipment. The terms **CAUTION**, **WARNING**, and **DANGER** are used in conjunction with the Safety-Alert Symbol (a triangle with an exclamation mark) to indicate the degree of hazard for items of personal safety.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

**IMPORTANT
or NOTICE**

Is used to address practices not related to personal injury.

NOTE

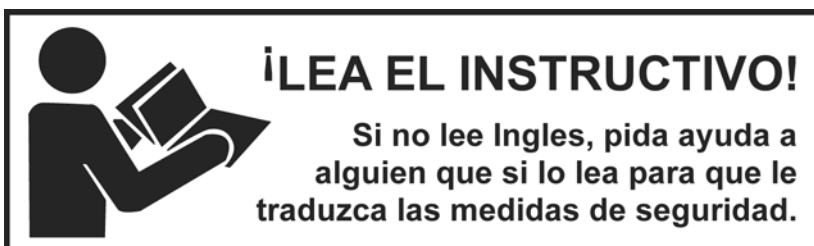
Indicates helpful information.

WOODS®

ALITEC™
BMP®
CENTRAL FABRICATORS®
GANNON®
GILL®
WAIN-ROY®
WOODS®

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This Operator's Manual should be regarded as part of the machine. Suppliers of both new and second-hand machines must make sure that this manual is provided with the machine.

SPECIFICATIONS

	<u>DS96</u>	<u>DS120</u>
Cutting Height (varies with tire selection)	2" - 15"	2" - 15"
Cutting Width	96"	120"
Overall Width	103"	127"
Tractor HP	40 - 120	40 - 120
Tractor PTO rpm	540	540
Blade Spindle	2	2
Blade Overlap	4"	4"
Number of Blades	4	4
Center Driveline with Slip Clutch	Cat 4	Cat 4
Side Frame Thickness	7 ga	7 ga
Weight - Pull-Type (approximate lbs.)	1,800	1,930
Blade Speed (feet per minute)	15,900	16,700
Blade Rotation	Left Spindle: CCW; Right Spindle: CW	
Wheel Size	15" Rims or 21" OD Solid Tires 22" or 29" Used Aircraft Tires	
Torsion Protection	Slip Clutch and Flex Couplers	

GENERAL INFORMATION

 **WARNING**

■ Some illustrations in this manual show the equipment with safety shields removed to provide a better view. This equipment should never be operated with any necessary safety shielding removed.

The purpose of this manual is to assist you in operating and maintaining your cutter. Read it carefully. It furnishes information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information

may be general in nature due to unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing but, due to possible inline production changes, your machine may vary slightly in detail. We reserve the right to redesign and change the machines as may be necessary without notification.

Throughout this manual, references are made to right and left directions. These are determined by standing behind the equipment facing the direction of forward travel. Blade rotation is clockwise (right) and counter-clockwise (left) as viewed from the top of the cutter.

BE SAFE!

BE ALERT!

BE ALIVE!

BE TRAINED

Before Operating Mowers!



ASSOCIATION OF
EQUIPMENT
MANUFACTURERS

*Safety Training
Does Make a Difference.*

Free Mower Safety Video

Fill out and return the order form and we will send you a FREE VHS or DVD video outlining ***Industrial and Agricultural Mower Safety Practices***. The 22 minute video, developed in cooperation with AEM (Association of Equipment Manufacturers), reinforces the proper procedures to follow while operating your mowing equipment. The video does not replace the information contained in the Operator's Manual, so please review this manual thoroughly before operating your new mowing equipment.

Also, available from the Association of Equipment Manufacturers:

A large variety of training materials (ideal for groups) are available for a nominal charge from AEM. Following is a partial list:

- **Training Package for Rotary Mowers/Cutters-English**
Contains: DVD & VHS (English)
 Guidebook for Rotary Mowers/Cutters (English)
 AEM Industrial/Agricultural Mower Safety Manual (English)
 AEM Agricultural Tractor Safety Manual (English)

- **Training Package for Rotary Mowers/Cutters-English/Spanish**
Contains: DVD & VHS (English/Spanish)
 Guidebook for Rotary Mowers/Cutters (English/Spanish)
 AEM Industrial/Agricultural Mower Safety Manual (English/Spanish)
 AEM Agricultural Tractor Safety Manual (English/Spanish)

AEM training packages are available through:

AEM at: www.aem.org

or

Universal Lithographers, Inc.

Email: aem@ulilitho.com

800-369-2310 tel

866-541-1668 fax



Free Mower/Cutter Safety Video Order Form

- Please send me (Select one)
- VHS** Format - VHS01052 Safety Video
- DVD** Format - DVD01052 Safety Video

Name: _____ Phone: _____

Address: _____

Mower/Cutter Model: _____ Serial #: _____

Send to: ATTENTION: DEALER SERVICES
 WOODS EQUIPMENT COMPANY
 PO BOX 1000
 OREGON IL 61061-1000
 USA

SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance, and storage of equipment.

It has been said, "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

TRAINING

- **Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information. (Replacement manuals and safety decals are available from your dealer. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.) Failure to follow instructions or safety rules can result in serious injury or death.**
- **If you do not understand any part of this manual and need assistance, see your dealer.**
- **Know your controls and how to stop engine and attachment quickly in an emergency.**
- **Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.**
- **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.**
- **Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**
- **Never allow children or untrained persons to operate equipment.**

PREPARATION

- **Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.**
- **Air in hydraulic systems can cause erratic operation and allows loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.**
- **Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.**
- **Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**
- **Make sure attachment is properly secured, adjusted, and in good operating condition.**
- **Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.**
- **If equipped with driveline guard tether chains, make sure they are attached to the tractor and equipment as shown in the pamphlet that accompanies the driveline. Replace if damaged or broken. Check that driveline guards rotate freely on driveline before putting equipment into service.**
- **Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in "locked up" position at all times.**
- **Inspect chain shielding before each use. Replace if damaged.**

(Safety Rules continued on next page)

SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



(Safety Rules continued from previous page)

- Remove accumulated debris from this equipment, power unit, and engine to avoid fire hazard.
- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Do not put this equipment into service unless all side skids are properly installed and in good condition. Replace if damaged.
- A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, front tractor wheels could raise up resulting in loss of steering. The weight may be attained with front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.
- Inspect and clear area of stones, branches, or other hard objects that might be thrown, causing injury or damage.

OPERATION

- Full chain or rubber shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.
 - If this machine is not equipped with full chain or rubber shielding, operation must be stopped when anyone comes within 300 feet (92 m).
 - This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Never direct discharge toward people, animals, or property.
- Do not operate or transport equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.

- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Always comply with all state and local lighting and marking requirements.
- Never allow riders on power unit or attachment.
- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS system in “locked up” position at all times.
- Always sit in power unit seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting power unit engine.
- Operate tractor PTO at 540 RPM. Do not exceed.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Do not operate or transport on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.
- Leak down or failure of mechanical or hydraulic system can cause equipment to drop.
- On pull-type or semi-mounted units with optional hydraulic cutting height adjustment, use a single-acting cylinder with a maximum extended length of 28-1/4" (718 mm) from attaching point center to center.
- On mounted units with optional hydraulic cutting height adjustment, use a double-acting cylinder with a maximum extended length of 28-1/4" (718 mm) from attaching point center to center.

TRANSPORTATION

- The maximum transport speed for towed and semi-mounted machines is 20 mph (32 km/h). Regardless of the maximum speed capability of the towing tractor, do not exceed the implement's max-



SAFETY RULES

ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



imum transport speed. Doing so could result in:

- Loss of control of the implement and tractor
 - Reduced or no ability to stop during braking
 - Implement tire failure
 - Damage to the implement or its components.
- Use additional caution and reduce speed when under adverse surface conditions, turning, or on inclines.
 - Do not operate PTO during transport.
 - Never tow this implement with a motor vehicle.
 - Do not operate or transport on steep slopes.
 - Do not operate or transport equipment while under the influence of alcohol or drugs.
 - Always comply with all state and local lighting and marking requirements.
 - Never allow riders on power unit or attachment.

MAINTENANCE

- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to equipment, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- Before performing any service or maintenance, disconnect driveline from tractor PTO.
- Before working underneath, raise mower, install transport lock, and block mower securely. Hydraulic system leak down and failure of mechanical or hydraulic system can cause equipment to drop.
- Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.
- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.
- Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.

- Never go underneath equipment (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death. Follow Operator's Manual instructions for working underneath and blocking requirements or have work done by a qualified dealer.
- Make sure attachment is properly secured, adjusted, and in good operating condition.
- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Make certain all movement of equipment components has stopped before approaching for service.
- Frequently check blades. They should be sharp, free of nicks and cracks, and securely fastened.
- Do not handle blades with bare hands. Careless or improper handling may result in serious injury.
- Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.
- Tighten all bolts, nuts, and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.
- Make sure all safety decals are installed. Replace if damaged. (See Safety Decals section for location.)
- Make sure shields and guards are properly installed and in good condition. Replace if damaged.
- Do not disconnect hydraulic lines until machine is securely blocked or placed in lowest position and system pressure is released by operating valve levers.
- Leak down or failure of mechanical or hydraulic system can cause equipment to drop.
- Explosive separation of tire and rim parts can cause serious injury or death. Release all air pressure before loosening bolts on wheel.

SAFETY RULES



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



STORAGE

- Keep children and bystanders away from storage area.
- Follow manual instructions for storage.

On mounted and semi-mounted cutters:

- Disconnect cutter driveshaft and secure up off ground. Raise cutter with 3-point hitch. Place blocks under cutter side skids. Lower cutter onto blocks. Disconnect hydraulic lines to optional cyl-

inder. Disconnect cutter from tractor 3-point hitch and carefully drive tractor away from cutter.

ON PULL-TYPE CUTTERS:

- Raise cutter and block securely. Block wheels and raise tongue with jack. Disconnect hydraulic lines to optional cylinder. Disconnect driveline and secure up off the ground.



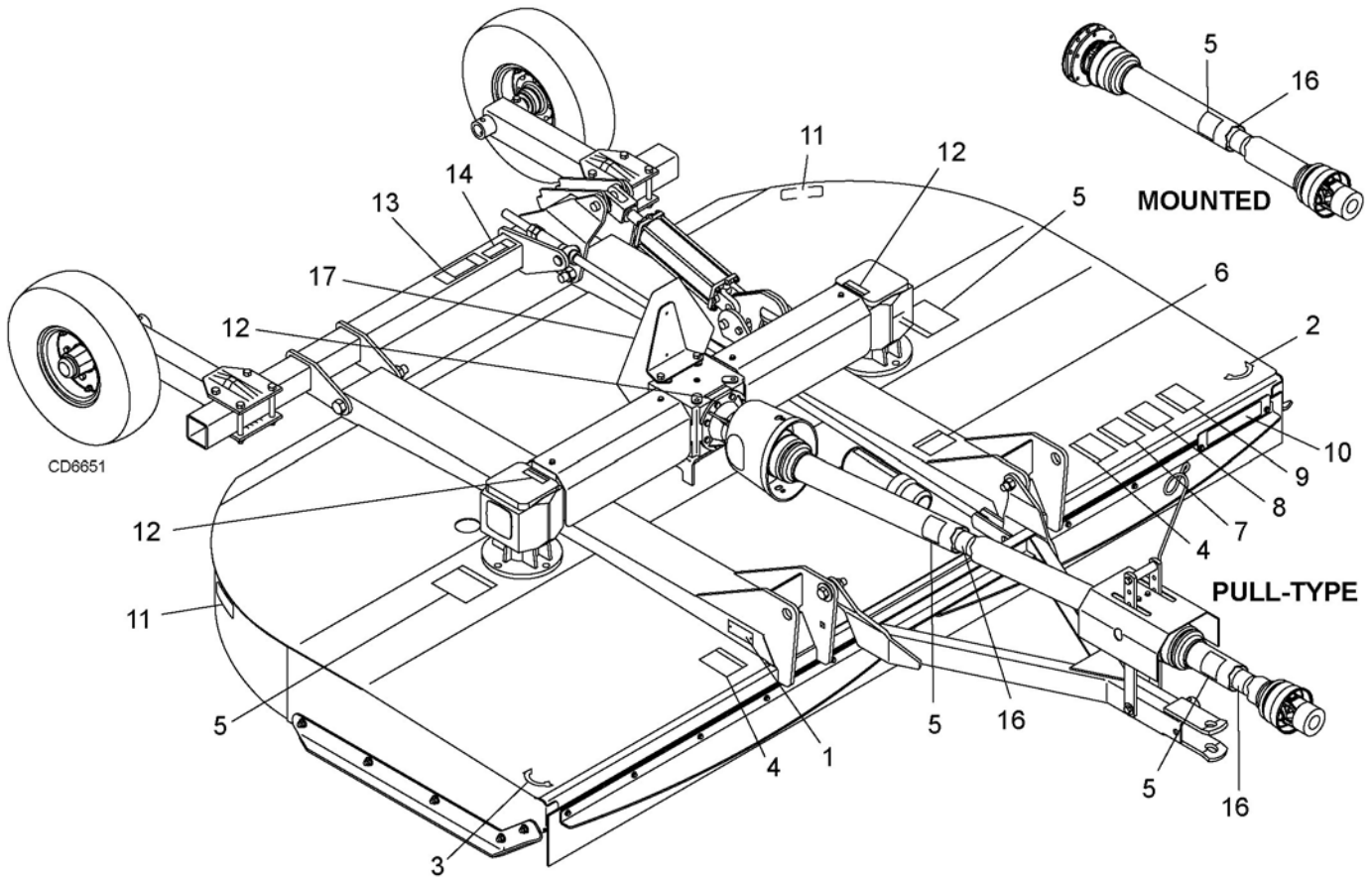
SAFETY & INSTRUCTIONAL DECALS



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Replace Immediately If Damaged!



1 - SERIAL NUMBER PLATE



2 - PN 5669



3 - PN 12777



4 - PN 1003751

WARNING			
CRUSHING AND PINCHING HAZARD			
<ul style="list-style-type: none"> ■ Be extremely careful handling various parts of the machine. They are heavy and hands, fingers, feet, and other body parts could be crushed or pinched between tractor and implement. ■ Operate tractor controls from tractor seat only. ■ Do not stand between tractor and implement when tractor is in gear. ■ Make sure parking brake is engaged before going between tractor and implement. ■ Stand clear of machine while in operation or when it is being raised or lowered. 			
<p>FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH.</p>			
			1003751-A

(Safety Decals continued on next page)

SAFETY & INSTRUCTIONAL DECALS



ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Replace Immediately If Damaged!

(Safety Decals continued from previous page)

5 - PN 18864

DANGER
<p>ROTATING DRIVELINE CONTACT CAN CAUSE DEATH KEEP AWAY!</p> <p>DO NOT OPERATE WITHOUT -</p> <ul style="list-style-type: none"> ■ All driveline guards, tractor and equipment shields in place ■ Drivelines securely attached at both ends ■ Driveline guards that turn freely on driveline
<small>18864-C</small>

8 - PN 18865

WARNING
<p>FALLING OFF CAN RESULT IN BEING RUN OVER.</p> <ul style="list-style-type: none"> ■ Tractor must be equipped with ROPS (or ROPS CAB) and seat belt. Keep foldable ROPS systems in "locked up" position at all times. ■ Buckle Up! Keep seat belt securely fastened. ■ Allow no riders. <p>RAISED EQUIPMENT CAN DROP AND CRUSH.</p> <ul style="list-style-type: none"> ■ Before working underneath, follow all instructions and safety rules in operator's manual and securely block up all corners of equipment with jack stands. ■ Securely blocking prevents equipment dropping from hydraulic leak-down, hydraulic system failures or mechanical component failures. <p>FALLING OFF OR FAILING TO BLOCK SECURELY CAN RESULT IN SERIOUS INJURY OR DEATH.</p>
<small>18865-C</small>

6 - PN 18866

WARNING
<p>DO NOT EXCEED PTO SPEED OF 540 RPM</p> <p>PTO speeds higher than 540 RPM can cause equipment failure and personal injury.</p>
<small>18866-D</small>

9 - PN 15503

DANGER
<p>ROTATING BLADES AND THROWN OBJECTS</p> <ul style="list-style-type: none"> ■ Do not put hands or feet under or into mower when engine is running. ■ Before mowing, clear area of objects that may be thrown by blade. ■ Keep bystanders away. ■ Keep guards in place and in good condition. <p>BLADE CONTACT OR THROWN OBJECTS CAN CAUSE SERIOUS INJURY OR DEATH.</p>
<small>15503-C</small>

7 - PN 18877

WARNING
<p>TO AVOID SERIOUS INJURY OR DEATH:</p> <ul style="list-style-type: none"> ■ Read Operator's Manual (available from dealer) and follow all safety precautions. ■ Keep all shields in place and in good condition. ■ Operate mower from tractor seat only. ■ Lower mower, stop engine and remove key before dismounting tractor. ■ Allow no children or untrained persons to operate equipment. ■ Do not transport towed or semi-mounted units over 20 mph. <p>FAILURE TO OPERATE SAFELY CAN RESULT IN INJURY OR DEATH.</p>
<small>18877-C</small>

10 - PN 1002940
AMBER REFLECTOR 9"

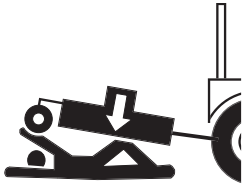
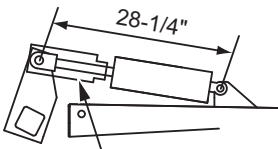
12 - PN 1004114

11 - PN 57123
RED REFLECTOR 9"


DANGER
<p>If shaft connection is visible, shield is missing. Replace shield before operating equipment.</p>
<small>1004114</small>

SAFETY & INSTRUCTIONAL DECALS
⚠️ ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! ⚠️
Replace Immediately If Damaged!

13 - PN 1004991

 <p>1004991</p>	<p>⚠️ WARNING</p> <p>RAISED CUTTER CAN DROP AND CRUSH</p> <ul style="list-style-type: none"> ■ Cutters must be equipped with transport lock. ■ Before working underneath, transport lock must be in the raised position. All corners of cutter must be securely blocked with jack stands. ■ All transport components must be functional, kept in good condition, and stored on equipment. ■ Blocking up prevents cutter dropping from hydraulic leak down, hydraulic system failures, or mechanical component failures. <p align="center">FAILURE TO FOLLOW INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR DEATH.</p>	<p>TRANSPORT LOCK AND CYLINDER REQUIREMENTS</p> <p>SINGLE-ACTING FULL EXTENSION</p>  <p>TRANSPORT LOCK</p>

14 - PN 19924

 <p>19924-B</p>	<p>⚠️ WARNING</p> <p>HIGH-PRESSURE HYDRAULIC OIL LEAKS CAN PENETRATE SKIN RESULTING IN SERIOUS INJURY, GANGRENE OR DEATH.</p> <ul style="list-style-type: none"> ■ Check for leaks with cardboard; never use hand. ■ Before loosening fittings: lower load, release pressure, and be sure oil is cool. ■ Consult physician immediately if skin penetration occurs.

16 - PN 33347

<p>⚠️ DANGER</p>  <p>GUARD MISSING. DO NOT OPERATE.</p>
<p>⚠️ DANGER</p>  <p>GUARD MISSING. DO NOT OPERATE.</p> <p><small>33347E</small></p>
<p>⚠️ DANGER</p>

PN 1006348

<p>⚠️ WARNING</p>	<p>EXPLOSION HAZARD</p>
<p>RELEASE ALL AIR PRESSURE BEFORE LOOSENING BOLTS. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY. MAX. SPEED: 20 MPH, MAX. WEIGHT: 4000 LBS., MAX AIR PRESSURE: 40 PSI</p>	

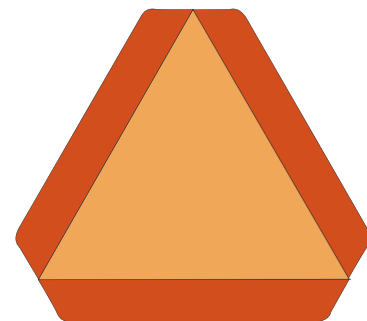
BE CAREFUL!

Use a clean, damp cloth to clean safety decals.

Avoid spraying too close to decals when using a pressure washer; high-pressure water can enter through very small scratches or under edges of decals causing them to peel or come off.

Replacement safety decals can be ordered free from your Woods dealer. To locate your nearest dealer, check the Dealer Locator at www.WoodsEquipment.com, or in the United States and Canada call 1-800-319-6637.

17 - PN 24611
SLOW MOVING VEHICLE EMBLEM



OPERATION

The operator is responsible for the safe operation of the cutter. The operator must be properly trained. Operators should be familiar with the cutter, the tractor, and all safety practices before starting operation. Read the safety rules and safety decals on page 7 to page 13.

This medium-duty cutter is designed for grass and weed mowing and shredding.

Recommended mowing speed for most conditions is from 2 to 5 mph.

! DANGER

■ Full chain or rubber shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain or rubber shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

! WARNING

- Never allow riders on power unit or attachment.
- Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.
- Operate tractor PTO at 540 RPM. Do not exceed.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.

! CAUTION

■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

TRACTOR STABILITY

! WARNING

■ A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, front tractor wheels could raise up resulting in loss of steering. The weight may be attained with front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.

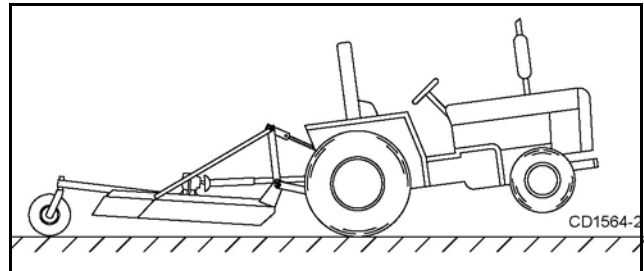


Figure 1. Tractor Stability

CONNECT CUTTER TO TRACTOR (PULL-TYPE)

NOTICE

■ The horizontal distance between the end of the tractor PTO shaft and the drawbar hitch point should be 14" for 540 RPM cutters. This distance must not vary more than plus or minus (1") or the drive may be damaged when turning.

1. Adjust tractor drawbar to obtain the desired drawbar hitch point distance.

NOTE: On some tractors, a drawbar kit must be used to obtain the required dimension. Check with your tractor dealer for assistance.

2. Install tractor drawbar bracket to the tractor drawbar using cap screw and hex nut.
3. Attach parking jack to cutter tongue. Raise tongue to tractor drawbar height.
4. Place special heat-treated washer between cutter tongue and drawbar.
5. Secure cutter to tractor drawbar with a high-strength drawbar pin 3/4" or larger. Keep pin in place during operation.
6. Attach safety tow chain to drawbar support. Leave enough slack for turning.

7. Connect cutter driveline to tractor PTO shaft, making sure the spring-activated lock pin slides freely and is seated in tractor PTO splined groove.
8. Remove parking jack from the tongue and attach it to the storage post on the front of the cutter.
9. Adjust H-frame bearing height so that the front driveline is parallel to the ground. Secure with 5/8 x 5-21/32 clevis pin and 3/16 x 1-1/2 cotter pin.
10. Attach drive shaft shield to bearing housing using two 3/8 x 1 cap screws and 3/8 lock washers.

Hydraulic Connection

1. Inspect hydraulic hoses to ensure they are in good condition.
2. Clean the fittings before connecting them to the tractor hydraulic ports.
3. Attach the hydraulic hose to the tractor.
4. Route the hose through the hose holder at the hitch and be sure the hose can slide freely in the holder. Do not allow hose slack to drag on the ground or become caught on tractor protrusions.
5. From the operator position, start tractor and raise and lower deck several times to purge trapped air from the hydraulic cylinder.

Interference Check

1. Be sure that tractor 3-point lift links do not interfere with hydraulic hoses, cutter driveline, or cutter frame.
2. Check for straight-ahead operation and at full-turning angles. If there is any interference, remove the lower lift links.
3. Contact between tractor lift links and cutter parts can cause damage, especially when turning.

CONNECT CUTTER TO TRACTOR (MOUNTED)

WARNING

■ A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, front tractor wheels could raise up resulting in loss of steering. The weight may be attained with front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.

Tractor Adjustments

Before attaching tractor to cutter, install sway blocks or sway chains, or adjust stabilizer bars. Refer to the tractor operator's manual for instructions.

Install tractor front end weights as recommended by the tractor manufacturer to provide 20% of weight on front wheels.

DS96 Category 2 Standard Hitch

1. Position the tractor 3-point lower lift arms over the hitch pins and secure with 7/16 klik pins.
2. Connect the tractor top link to the cutter A-frame using the upper holes and 1" OD sleeve. The break link must be placed in the lower holes of the A-frame. See Figure 2.

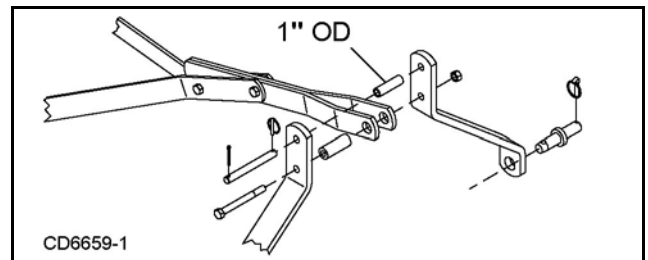


Figure 2. DS96 Cat. 2 Standard Hitch Connection

DS96 Category 2 Quick Hitch

An optional Category 2 quick coupler kit (24845) is available for DS96 cutters.

DS120 Category 2 Standard Hitch

1. Position the tractor 3-point lower lift arms between the hitch mast plates and secure with hitch pins and 7/16 klik pins. Note the hitch pins orientation.
2. Connect the tractor top link to the cutter A-frame using the upper holes and 1" OD sleeve. The break link must be placed in the lower holes of the A-frame. See Figure 3.

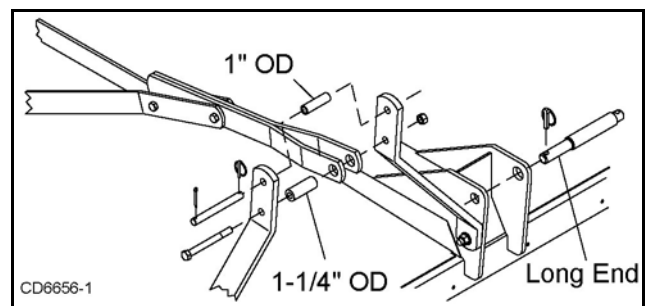


Figure 3. DS120 Cat. 2 Standard Hitch Connection

DS120 Category 2 Quick Hitch

1. Position the hitch pins as shown in Figure 4.
2. Attach tractor with quick hitch to cutter and secure according to quick hitch manufacturer's instructions.

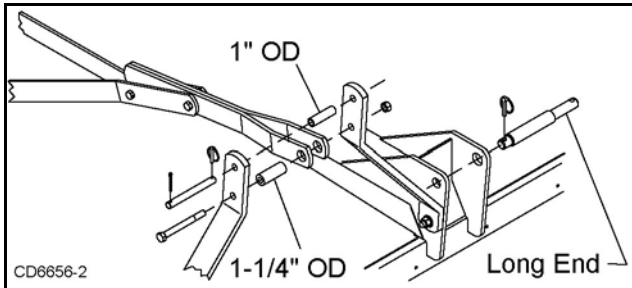


Figure 4. DS120 Category 2 Quick Hitch Connection

DS120 Category 3 Standard Hitch

1. Position the tractor 3-point lower lift arms between the hitch mast plates and secure with hitch pins and 7/16 klik pins. Note the hitch pins orientation.
2. Connect the tractor top link to the cutter A-frame using the upper holes and 1-1/4" OD sleeve. The break link must be placed in the lower holes of the A-frame. See Figure 5.

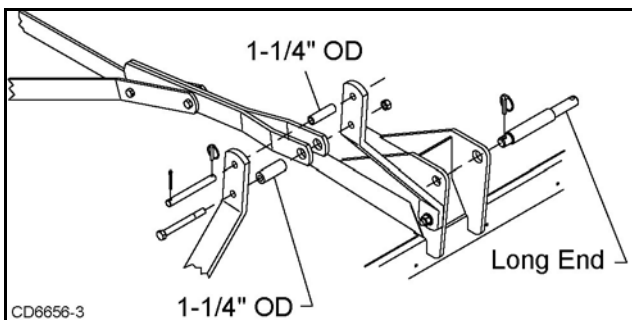


Figure 5. DS120 Cat. 3 Standard Hitch Connection

DS120 Category 3 Quick Hitch

1. Position the hitch pins as shown in Figure 6.
2. Place break link and 1-1/4" OD sleeve in the top hole of the A-frame and secure.
3. Attach tractor with quick hitch to cutter and secure according to quick hitch manufacturer's instructions.

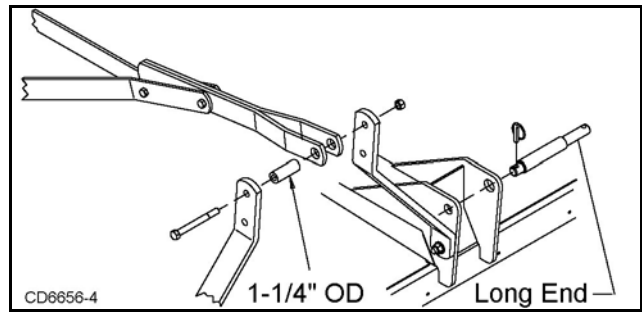


Figure 6. DS120 Category 3 Quick Hitch Connection

Hydraulic Connection (DS120 Only)

1. Inspect hydraulic hoses to ensure they are in good condition.
2. Clean the fittings before connecting them to the tractor hydraulic ports.
3. Route hoses through hose holder on 3-point mast. Be sure hoses can slide freely in holder. Do not allow hose slack to drag on the ground or become caught on tractor protrusions.

DRIVELINE ATTACHMENT

Attach the cutter to the tractor 3-point hitch (or quick hitch if available). Do not attach driveline. Raise and lower cutter to determine maximum and minimum distance between the tractor PTO shaft and the gearbox input shaft. If the distance is too large, the driveline will be too short for proper engagement. If distance is too small, the driveline may bottom out in operation and damage the cutter or tractor.

Driveline length must be sufficient to provide at least 1/3 driveline length of engagement during operation. There must be at least 4 inches of engagement at the cutters lowest possible point of operation. The driveline must not bottom out when raised to the maximum height possible.

If driveline is too short please call your Woods dealer for a longer driveline.

If driveline is too long please follow the instructions for shortening the driveline.

SHORTEN DRIVELINE

1. Move cutter up and down to get the shortest possible distance between tractor PTO shaft and gearbox input shaft.
2. Separate driveline into two halves and connect them to the tractor PTO and gearbox.
3. Place driveline halves parallel to one another to determine how much to shorten the driveline.

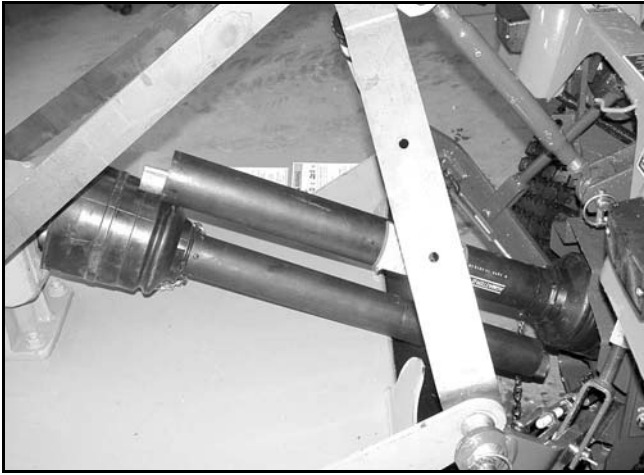


Figure 7. Drive Halves Placed Parallel

4. Measure from end of the upper shield to the base of the bell on the lower shield (A). Add 1-9/16" to dimension (A). See Figure 8.

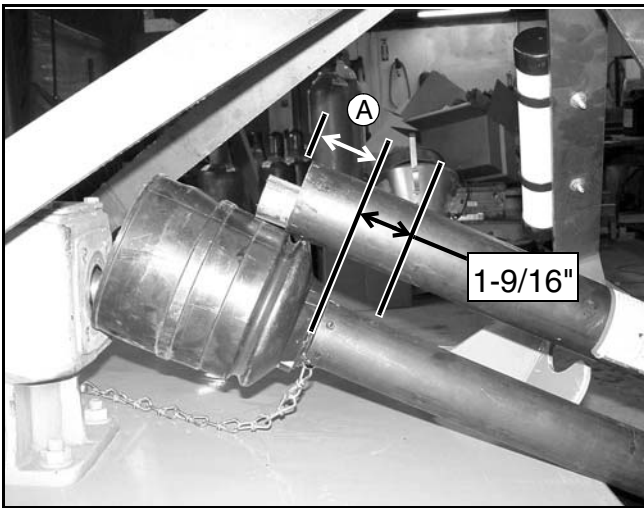


Figure 8. Determine Shield Length

5. Cut the shield to the overall dimension.

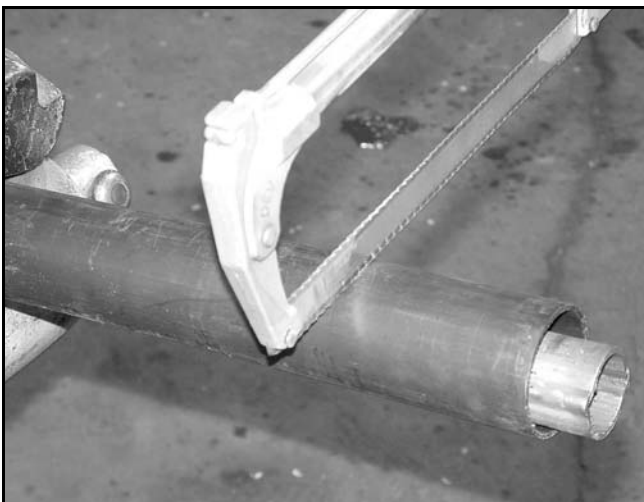


Figure 9. Cut Shield

6. Place the cutoff portion of the shield against the end of the shaft and use as a guide. Mark and cut the shaft.



Figure 10. Cut Shaft to Length

7. Repeat step 6 for the other half of the drive.
8. File and clean cut ends of both drive halves.

Do not use tractor if proper driveline engagement cannot be obtained through these methods.

Connect driveline to tractor PTO shaft, making sure the spring-activated locking collar slides freely and locks driveline to PTO shaft.

NOTICE

- If attaching with quick hitch the distance between the tractor PTO and gearbox input shaft will increase. Please follow the steps as you would for a 3-point hitch to insure proper engagement.

DRIVELINE INTERFERENCE CHECK

1. Check for clearance between driveline and cutter deck.
2. Slowly lift cutter and observe driveline. If clearance between driveline and cutter deck is less than 1 inch, shorten top link or limit upper travel of lower hitch arms. Refer to tractor operator's manual for instructions.

CUTTING HEIGHT ADJUSTMENT

⚠ WARNING

- On pull-type units with optional hydraulic cutting height adjustment, use a single-acting cylinder with a maximum extended length of 28-1/4" (718 mm) from attaching point center to center.

Cutting height range is from 2" to 15". A hydraulic cylinder or ratchet jack is available for cutting height adjust-

ment on pull-type units and DS120 mounted units. DS96 requires manual adjustment using holes in the tailwheel arms.

When selecting a cutting height, you should consider the area of operation. If the ground is rolling and has mounds the blades could contact, set the cutting height accordingly.

NOTICE

■ **Avoid ground contact with blades. Striking ground with blades produces one of the most damaging shock loads a cutter can encounter. If this occurs repeatedly, the cutter, driveline, and gearboxes will be damaged.**

The blade cutting edge is approximately 1-3/4 inches above the bottom of the skid shoes.

Pull-Type Units

To adjust cutter for normal mowing, select a cutting height (example: 4-inches).

Using any of the optional cutting height mechanisms, raise or lower the tailwheel and set position A to 2-1/4 inches. Loosen the jam nut on the attitude rod that runs from the tongue to the tailwheel. Adjust rod in or out until position B is approximately 1/4 to 1/2 inches more than position A. Refer to Figure 11.

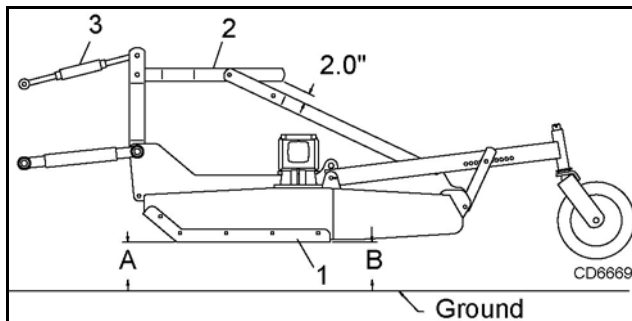


Figure 11. Cutting Height Adjustment

Mounted Units

To adjust cutter for normal mowing, select a cutting height (example: 4").

Adjust tractor 3-point hitch to obtain a distance of 2-1/4 inches at position A. See Figure 11.

DS96 - Using the various holes in the tailwheel arms, align the tailwheel brace with tailwheel arm to obtain a distance greater than 2-1/4 inches at position B.

Adjust top link to provide 2 inches of clearance between the break link (2) and the rear lift links. See Figure 11. This clearance will allow the cutter to float over uneven terrain.

DS120 - Using any of the optional height adjustment devices, raise or lower the tailwheel to obtain 2-1/2 to 2-3/4 inches at position B.

Adjust top link to provide 2 inches of clearance between the break link (2) and the rear lift links. See Figure 11. This clearance will allow the cutter to float over uneven terrain.

ATTITUDE ADJUSTMENT (PULL-TYPE)

Normal Mowing

For the most economical power use and best cutting results, the cutter should be from 1/2" to 3/4" higher at the rear than at the front.

For grass and weed mowing, adjust cutter to run level or with the front slightly lower.

Shredding

For shredding, it is better to set rear of cutter slightly lower than the front. How much lower depends on the material to be shredded. Determine the best setting for your situation by experimenting. Use a slow ground speed for better shredding.

DRIVELINE ADJUSTMENT (PULL-TYPE)

With the cutting height established, adjust the driveline carrier bearings in the H-frames so that the front driveline is parallel to the ground with cutter in cutting position.

WHEEL SPACING (DS120 ONLY)

Wheels may be adjusted to any position for row crop shredding.

BLADE SELECTION

There are two blade options: standard suction blades and flat double-edge blades.

The standard suction blade is a general use, multi-purpose blade.

The double-edge blade requires less power because it does not mulch or recut material. It is designed for use in areas where blade wear is a problem. Sandy soils are extremely hard on blades.

Blade rotation, viewed from top of cutter, is clockwise for the right crossbar, and counter-clockwise for the left crossbar.

When one cutting surface of a double-edge blade is worn, the opposite one may be used by placing the blade on a crossbar of the opposite rotation. Blades from the right may be used on the left. Blades from the left may be used on the right.

Blades must be moved in pairs. Never use one new blade and one used blade on a crossbar.

TRACTOR OPERATION

Use care when operating around tree limbs and other low objects.

Use care and reduce ground speed on rough terrain. Always watch for hidden hazards.

Being knocked off or falling off tractor can result in serious injury or death.

Only use a tractor with a Roll Over Protective Structure (ROPS) and seat belt. Securely fasten seat belt before starting tractor.

The cutter is operated with tractor controls. Engage the PTO at a low rpm to prevent excessive loads on the cutter drive system. Increase throttle to proper PTO speed (540 rpm).

Be sure operator is familiar with all controls and can stop tractor and cutter quickly in an emergency. The operator should give complete, undivided attention to operating tractor and cutter.

OPERATING TECHNIQUE

Power for operating the cutter is supplied by the tractor PTO. Operate PTO at 540 rpm. Know how to stop the tractor and cutter quickly in an emergency.

Engage PTO at a low engine rpm to minimize stress on the drive system and gearbox. With PTO engaged, raise PTO speed to 540 rpm and maintain throughout cutting operation.

Gearbox protection is provided by a slip clutch with replacement fiber disc. The slip clutch is designed to slip when excessive torsional loads occur.

Move slowly into material. Adjust tractor ground speed to provide a clean cut without lugging the tractor engine. Use a slow ground speed for better shredding.

Proper ground speed will depend on the terrain and the material's height, type, and density.

Normally, ground speed will range from 2 to 5 mph. Tall, dense material should be cut at a low speed; thin, medium-height material can be cut at a faster ground speed.

Always operate tractor PTO at 540 rpm to maintain blade speed and to produce a clean cut.

Under certain conditions tractor tires may roll down some grass and prevent cutting at the same height as the surrounding area. When this occurs, reduce your ground speed but maintain PTO at 540 rpm. The lower ground speed will permit grass to rebound partially.

Cutter Operation

When beginning operation of the cutter, make sure that all persons are in a safe location. Slowly move into the material with the tractor PTO set at 540 rpm.

Mowing Tips

WARNING

- **Look down and to the rear and make sure area is clear before operating in reverse.**
- **Do not operate or transport on steep slopes.**
- **Do not stop, start, or change directions suddenly on slopes.**
- **Use extreme care and reduce ground speed on slopes and rough terrain.**
- **Watch for hidden hazards on the terrain during operation.**

CAUTION

- **Stop power unit and equipment immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.**

Maximum recommended ground speed for cutting or shredding is 6 miles per hour. Adjust tractor ground speed by using higher or lower gears to provide a clean cut without lugging tractor engine.

Tall material should be cut twice. Cut material higher the first pass. Cut at desired height at 90 degrees the second pass.

Remember, sharp blades produce cleaner cuts and use less power.

Before entering an area, analyze it to determine the best procedure. Consider the height and type of material to be cut and the terrain type (hilly, level or rough, etc.).

TRANSPORTING

WARNING

- **The maximum transport speed for towed and semi-mounted machines is 20 mph (32 km/h). Regardless of the maximum speed capability of the towing tractor, do not exceed the implement's maximum transport speed. Doing so could result in:**
 - **Loss of control of the implement and tractor**
 - **Reduced or no ability to stop during braking**
 - **Implement tire failure**
 - **Damage to the implement or its components.**

WARNING

■ **Use additional caution and reduce speed when under adverse surface conditions, turning, or on inclines.**

■ **Never tow this implement with a motor vehicle.**

1. Always transport with cutter in raised, locked position.
2. Raise cutter with hydraulic cylinder.
3. Rotate transport lock over cylinder rod. See Figure 33 on page 38.
4. Lower cylinder against transport lock.
5. To lower cutter for operation, extend hydraulic cylinder. Rotate transport lock back away from cylinder rod. Lower to desired cutting height.

STORAGE

WARNING

■ **Keep children and bystanders away from storage area.**

On Mounted and Semi-Mounted Cutters:

■ **Disconnect cutter driveshaft and secure up off ground. Raise cutter with 3-point hitch. Place blocks under cutter side skids. Lower cutter onto blocks. Disconnect hydraulic lines to optional cylinder. Disconnect cutter from tractor 3-point hitch and carefully drive tractor away from cutter.**

On Pull-Type Cutters:

■ **Raise cutter and block securely. Block wheels and raise tongue with jack. Disconnect hydraulic lines to optional cylinder. Disconnect driveline and secure up off the ground.**

PRE-OPERATION CHECK LIST **(OWNER'S RESPONSIBILITY)**

___ Review and follow all safety rules and safety decal instructions on page 7 to page 13.

- ___ Check that all safety decals are installed and in good condition. Replace if damaged.
- ___ Check that equipment is properly and securely attached to tractor.
- ___ Make sure driveline spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.
- ___ Set tractor PTO at correct rpm for your equipment.
- ___ Lubricate all grease fitting locations. Make sure PTO shaft slip joint is lubricated.
- ___ Check that all hydraulic hoses and fittings are in good condition and not leaking before starting tractor. Check that hoses are not twisted, bent sharply, kinked, frayed, or pulled tight. Replace any damaged hoses immediately.
- ___ Raise and lower equipment to make sure air is purged from hydraulic cylinders and hoses.
- ___ Check that all hardware is properly installed and secured.
- ___ Check to ensure blades are sharp, in good condition, and installed correctly. Replace if damaged.
- ___ Make sure tractor ROPS or ROPS cab and seat belt are in good condition. Keep seat belt securely fastened during operation.
- ___ Check that shields and guards are properly installed and in good condition. Replace if damaged.
- ___ Check cutting height, front-to-rear attitude, and top link adjustment.
- ___ Before starting engine, operator must be in tractor seat with seat belt fastened. Place transmission in neutral or park, engage brake and disengage tractor PTO.
- ___ Inspect area to be cut and remove stones, branches, or other hard objects that might be thrown and cause injury or damage.
- ___ Check that chain shielding is in good condition and replace any damaged chain links.
- ___ Make sure tractor 3-point lift links do not interfere with hydraulic hoses or driveline throughout full turning range.



OWNER SERVICE

The information in this section is written for operators who possess basic mechanical skills. If you need help, your dealer has trained service technicians available. For your protection, read and follow the safety information in this manual.

WARNING

■ **Keep all persons away from operator control area while performing adjustments, service, or maintenance.**

CAUTION

■ **If you do not understand any part of this manual and need assistance, see your dealer.**

■ **Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.**

BLOCKING METHOD

WARNING

■ **Never go underneath equipment (lowered to the ground or raised) unless it is properly blocked and secured. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death. Follow Operator's Manual instructions for working underneath and blocking requirements or have work done by a qualified dealer.**

To minimize the potential hazards of working underneath the cutter, follow these procedures:

1. Jackstands with a load rating of 1000 lbs. or more are the only approved blocking device for this cutter. Install a minimum of four jackstands (shown by Xs in Figure 12) under the cutter before working underneath unit.

Do not position jackstands under wheels, axles, or wheel supports. Components can rotate and cause cutter to fall.

2. Consider the overall stability of the blocked unit. Just placing jackstands underneath will not ensure your safety.

The working surface must be level and solid to support the weight on the jackstands. Make sure jackstands are stable, both top and bottom. Make sure cutter is approximately level.

3. With full cutter weight lowered onto jackstands, test blocking stability before working underneath.
4. If cutter is attached to tractor when blocking, set the brakes, remove key, and block cutter before working underneath.
5. Securely block rear tractor wheels, in front and behind. Tighten tractor lower 3-point arm anti-sway mechanism to prevent side-to-side movement.

LUBRICATION

Do not let excess grease collect on or around parts, particularly when operating in sandy areas.

See Figure 12 for lubrication points and frequency or lubrication based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

Use a lithium grease of #2 consistency with a MOLY (molybdenum disulfide) additive for all locations unless otherwise noted. Be sure to clean fittings thoroughly before attaching grease gun. One good pump of most guns is sufficient when the lubrication schedule is followed.

Gearbox Lubrication

1. Use a high quality gear oil with a viscosity index of 80W or 90W and an API service rating of GL-4 or -5 in gearboxes.
2. Fill gearbox until oil runs out the the lower hole on back side of center gearbox or side hole on spindle gearboxes. Check gearboxes daily for evidence of leakage, and contact your dealer if leakage occurs.

Driveline Lubrication

1. Lubricate the driveline slip joint every eight operating hours. Failure to maintain proper lubrication could result in damage to U-joints, gearbox, and driveline.
2. Lower cutter to ground, disconnect driveline from tractor PTO shaft, and slide halves apart but do not disconnect from each other.
3. Apply a bead of grease completely around male half where it meets female half. Slide drive halves over each other several times to distribute grease.
4. Grease side drive yoke where yoke attaches to side gearbox.

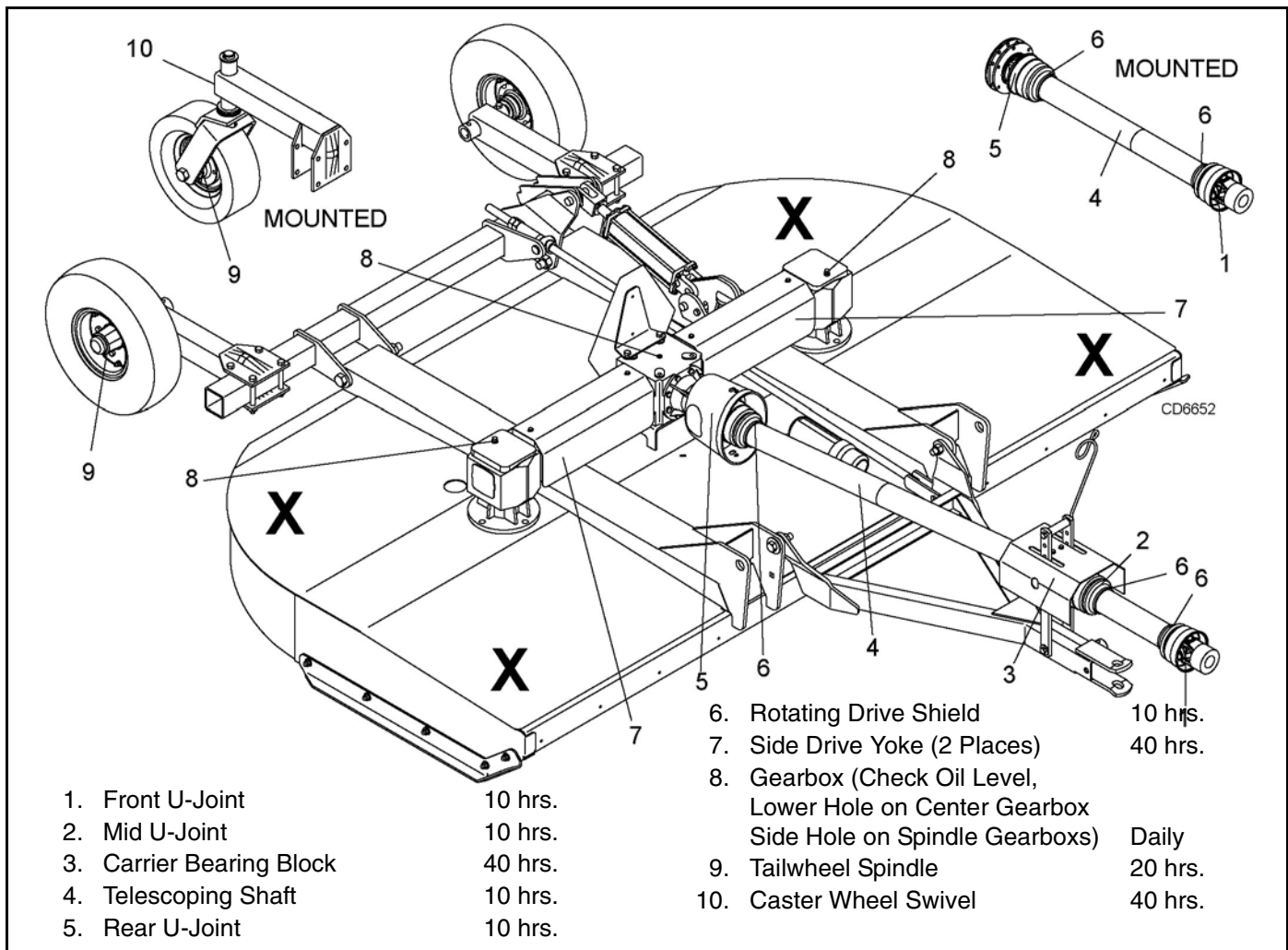


Figure 12. Jackstand Placement and Lubrication Points

SERVICING BLADES

Removing Blades (Figure 13)

NOTICE

■ If blade pin (12) is seized in crossbar and extreme force will be needed to remove it, support crossbar from below to prevent gearbox damage.

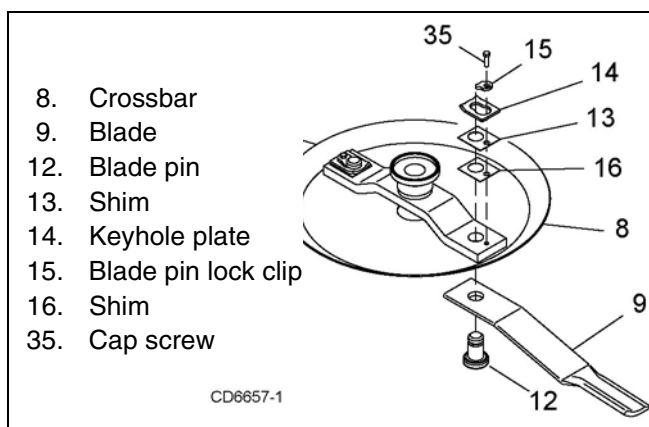


Figure 13. Blade Assembly

1. Disconnect driveline from tractor PTO.
2. Open blade access cover and align crossbar (8) with blade access hole in the cutter frame. Remove cap screw (35), blade pin lock clip (15), keyhole plate (14), and shims (13 & 16). Carefully drive blade pin (12) out of crossbar.
3. Rotate crossbar (8) and repeat for opposite blade.

Installing Blades

CAUTION

■ Your dealer can supply genuine replacement blades. Substitute blades may not meet original equipment specifications and may be dangerous.

NOTICE

■ Crossbar rotation has counterclockwise rotation on left gearbox and clockwise rotation on the right gearbox when looking down on cutter. Be sure to install blade cutting edge to lead in correct rotation.

NOTE: Always replace or sharpen both blades at the same time.

1. Inspect blade pin (12) for nicks or gouges, and if you find any, replace the blade pin.
2. Insert blade pin through the blade (9). Blade should swivel on blade pin; if it doesn't, determine the cause and correct.
3. Align crossbar (8) with blade access hole in cutter frame. Apply a liberal coating of Never Seez or equivalent to blade pin and crossbar hole. Make sure blade offset is away from cutter. Push blade pin through crossbar. Pin should rotate freely prior to installing blade clip (15).
4. Install shims (13 & 16) over blade pin.
NOTE: Only use enough shims to allow keyhole plate (14) to slide into blade pin groove.
5. Install blade clip (15) over keyhole plate and into blade pin groove.
6. Secure into position with cap screw (35). Torque cap screw to 85 lbs-ft.
7. Repeat steps for opposite side.

NOTE: Blade should be snug but should swivel on pin without having to exert excessive force. Keep any spacers not used in the installation as replacements or for future installation.

Sharpening Blades

NOTICE

■ When sharpening blades, grind the same amount on each blade to maintain balance. Replace blades in pairs. Unbalanced blades will cause excessive vibration, which can damage gearbox bearings. Vibration may also cause structural cracks to cutter.

1. Sharpen both blades at the same time to maintain balance. Follow original sharpening pattern.
2. Do not sharpen blade to a razor edge—leave at least a 1/16" blunt edge.
3. Do not sharpen back side of blade.

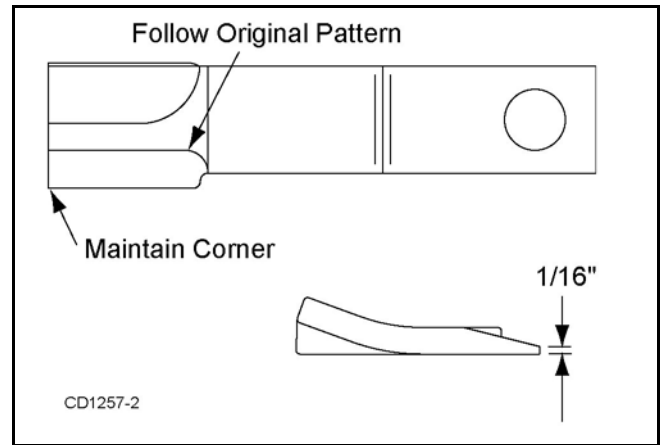


Figure 14. Sharpen Blade Cutting Edge

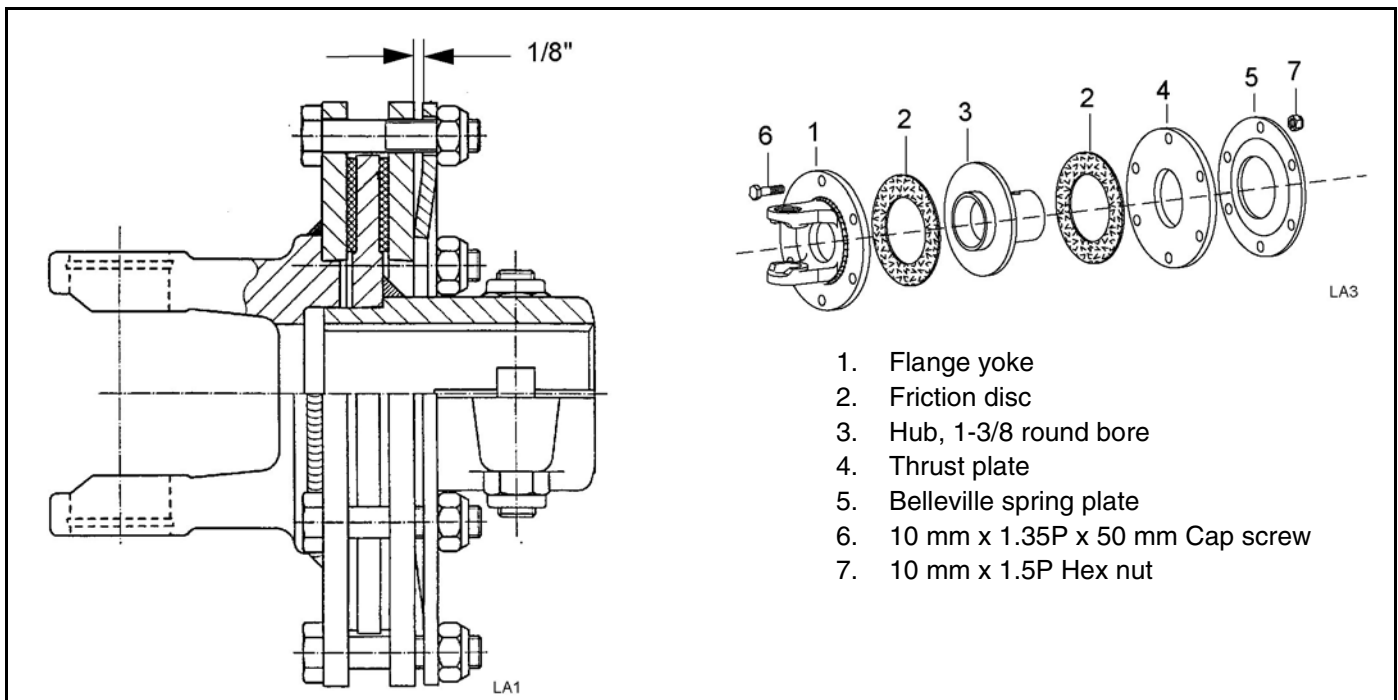


Figure 15. Slip Clutch Assembly

ADJUSTING SLIP CLUTCH

The slip clutch is designed to slip so that the gearbox and driveline are protected if the cutter strikes an obstruction. A new slip clutch or one that has been in storage over the winter may seize. Before operating the cutter, make sure it will slip by performing the following operation:

1. Turn off tractor engine and remove key. Remove driveline from tractor PTO. Loosen six 10 mm cap screws (6) to remove all tension from Belleville spring plate (5).
2. Hold clutch hub (3) solid and turn shaft to make sure clutch slips.
3. If clutch does not slip freely, disassemble and clean the thrust plate faces (4), flange yoke (1), and clutch hub (3).
4. Reassemble clutch. Tighten Belleville spring (5) until it is against the thrust plate (4) of the clutch, and then back off each of the six nuts by two full revolutions. The gap between Belleville spring and thrust plate should be 1/8" as shown in Figure 15.
5. If a clutch continues to slip when the spring is compressed to 1/8", check friction discs (2) for

excessive wear. Discs are 1/8" when new. Replace discs after 1/16" wear. Minimum disc thickness is 1/16".

RUBBER DISK REPLACEMENT

The flexible coupler side drive is designed to flex when striking heavy objects or during start-up to protect gearboxes. The rubber disks will wear out over time and require replacement much like slip clutch disks. To maximize rubber disk life, lower tractor engine speed to an idle when engaging the PTO and avoid striking the ground with cutter blades.

Periodically inspect the disks for signs of cracking. A disk may run for some time after a crack starts but this is the first sign that disk replacement is required in the future.

To replace the disks, remove hardware items (6, 7, 8, and 9). Remove sleeves (7) from old disk and install in new disk. Reassemble and torque bolts to 85 lbs-ft. See Figure 16. Take special care not to rotate gearbox shaft and throw blades out of time. If rubber disks have failed and blades are hitting, you will need to re-time the blades per instructions on page 34.

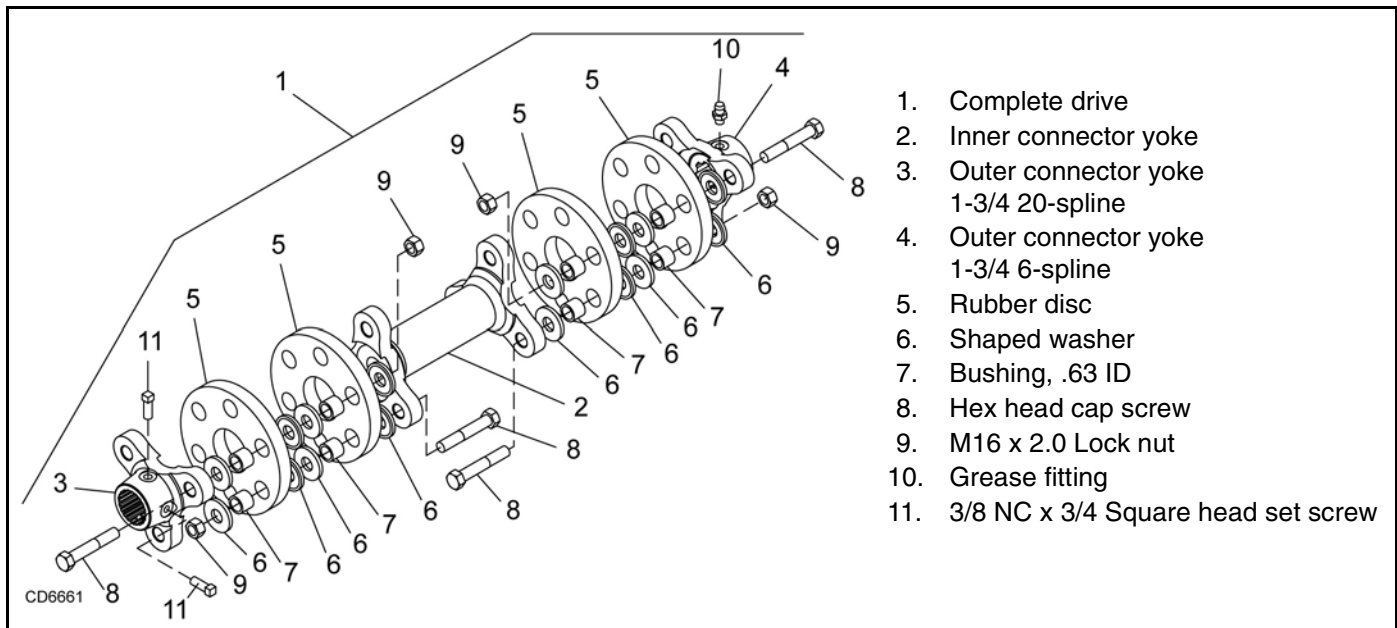


Figure 16. Flexible Coupler

SHIELDING REPAIR

DANGER

■ Full chain or rubber shielding is required for all non-agricultural mowing. Full shielding is also recommended for all agricultural use to further reduce the risk of thrown objects.

Repairing Rubber Shielding

Inspect belting and rear bands each day of operation and replace if bent, cracked, or broken.

Repairing Optional Chain Shielding

Inspect chain shielding each day of operation and replace any broken or missing chains as required.

CLEANING

After Each Use

- Remove large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Inspect machine and replace worn or damaged parts.
- Replace any safety decals that are missing or not readable.

Periodically or Before Extended Storage

- Clean large debris such as clumps of dirt, grass, crop residue, etc. from machine.
- Remove the remainder using a low-pressure water spray.
 1. Be careful when spraying near scratched or torn safety decals or near edges of decals as water spray can peel decal off surface.
 2. Be careful when spraying near chipped or scratched paint as water spray can lift paint.
 3. If a pressure washer is used, follow the advice of the pressure washer manufacturer.
- Inspect machine and replace worn or damaged parts.
- Sand down scratches and the edges of areas of missing paint and coat with Woods spray paint of matching color (purchase from your Woods dealer).
- Replace any safety decals that are missing or not readable (supplied free by your Woods dealer). See Safety Decals section for location drawing.

SERVICING TIRES SAFELY

Used Aircraft Tires (Figure 17)

WARNING



■ Explosive separation of tire and rim parts can cause serious injury or death. Release all air pressure before loosening bolts.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure and result in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and an extension hose long enough to allow you to stand to the side — not in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims, or missing lug bolts and nuts.

Never remove split rim assembly hardware (A) with the tire inflated.



Figure 17. Split Rim Tire Servicing

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Does not cut	<p>Dull blades</p> <p>Worn or broken blades</p> <p>Incorrect PTO speed</p> <p>Ground speed too fast</p> <p>Drive not functioning (blades do not turn when PTO is running)</p> <p>Gearbox malfunction</p> <p>Excessive clutch slippage</p> <p>Incorrect blade direction</p>	<p>Sharpen blades.</p> <p>Replace blades. (Replace in pairs only.)</p> <p>Set at rated PTO speed.</p> <p>Reduce ground speed.</p> <p>Check drive shaft connection. Check gearbox.</p> <p>Repair gearbox.</p> <p>Adjust clutch.</p> <p>Check to be sure blade edge is correct for direction of rotation.</p>
Streaks or ragged cut	<p>Broken or worn blades</p> <p>Attitude incorrect</p> <p>Ground speed too fast</p> <p>Excessive cutting height</p> <p>Excessive lush and tall vegetation</p>	<p>Replace or sharpen blades.</p> <p>Level machine.</p> <p>Reduce ground speed.</p> <p>Lower cutting height. (Note: Set height so blades do not frequently hit ground.)</p> <p>Recut at 90° to first pass.</p>
Excessive side skid wear	Running with skids continuously on ground	Raise cutting height or adjust.
Excessive clutch slippage	<p>Clutch out of adjustment</p> <p>Clutch discs worn; wear stops contacting opposite plate</p> <p>Blades hitting ground</p>	<p>Adjust clutch.</p> <p>Replace discs.</p> <p>Raise cutting height.</p>
Vibration	<p>Broken blade</p> <p>Bearing failure</p> <p>Hitch length incorrect</p> <p>Universal drive</p>	<p>Replace blades in pairs.</p> <p>Check gearbox shafts for side play.</p> <p>Reset hitch length.</p> <p>Adjust pedestal bearing height to be parallel to ground.</p>
Blades hitting deck	Bent blades or crossbar	Replace bent blades or crossbar.
Blades hitting each other	Side drive failure	Retime blades, or replace rubber coupler disks. See page 34.
Unit will not raise	Low oil	Add hydraulic oil.

DEALER SERVICE

The information in this section is written for dealer service personnel. The repair described here requires special skills and tools. If your shop is not properly equipped or your mechanics are not properly trained in this type of repair, you may be time and money ahead to replace complete assemblies.

WARNING

- Before working underneath, disconnect drive-line, raise cutter, lock in transport position, and block cutter securely. Hydraulic system leak down and failure of mechanical or hydraulic system can cause equipment to drop.
- Keep all persons away from operator control area while performing adjustments, service, or maintenance.

CAUTION

- Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

GEARBOX MAINTENANCE

NOTE: Read this entire section before starting any repair. Many steps are dependent on each other.

1. Fill gearbox with SAE 80W or 90W gear lube until it runs out the side level plug.

NOTE: Repair to this gearbox is limited to replacing bearings, seals, and gaskets. Replacing gears, shafts, and a housing is not cost effective. Purchasing a complete gearbox is more economical.

2. Inspect gearbox for leakage and bad bearings. Leakage is a very serious problem and must be corrected immediately. Bearing failure is indicated by excessive noise and side-to-side or end-play in gear shafts.

SEAL REPLACEMENT

Recommended sealant for gearbox repair is Permatex® Aviation 3D Form-A-Gasket or equivalent.

Leakage can occur at the vertical or horizontal gaskets and shaft seals.

Leakage at the horizontal gasket or seal can be repaired without removing the gearbox from the cutter.

SEAL INSTALLATION

NOTE: Proper seal installation is important. An improperly installed seal will leak.

1. Clean area in housing where seal outer diameter (OD) seats. Apply a thin coat of Permatex.
2. Inspect area of shaft where seal seats. Remove any burrs or nicks with an emery cloth.
3. Lubricate gear shaft and seal lips.
4. Place seal squarely on housing, spring-loaded lip toward housing. Select a piece of pipe or tubing with an OD that will sit on the outside edge of the seal but will clear the housing. Tubing with an OD that is too small will bow seal cage and ruin seal.
5. Carefully press seal into housing, avoiding distortion to the metal seal cage.

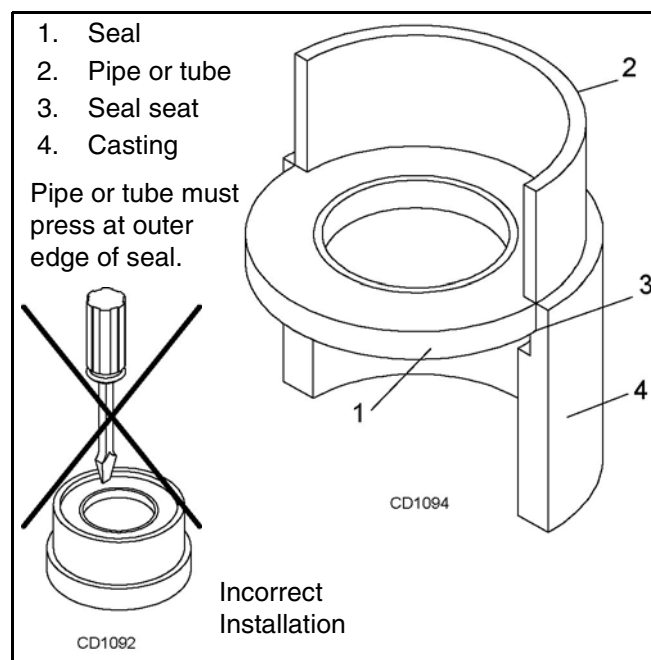


Figure 18. Seal Installation

VERTICAL SHAFT SEAL REPAIR (SPINDLE BOX)

Refer to Figure 19.

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (3) and siphon gear lube from housing through this opening.
3. Remove crossbar (see Crossbar removal on page 33).
4. Remove vertical shaft seal (16). Replace with new seal (see Seal Installation on page 27).

Vertical seal should be recessed in housing. Horizontal seal should be pressed flush with outside of housing.

NOTE: Distortion to seal cage or damage to seal lip will cause seal to leak.

5. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.
6. Remove and replace any seal damaged in installation.

HORIZONTAL SHAFT SEAL REPAIR

Refer to Figure 19.

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (3) and siphon gear lube from housing through this opening.
3. If the leak occurred at either end of horizontal shaft (spindle gearbox), remove oil cap (24) and/or oil seal (10). For splitter gearbox (Figure 20) use oil seals (11) and (17). Replace with new one (refer to Seal Installation, page 27).
4. Fill gearbox with SAE 80W or 90W gear lube until it runs out the level plug.

SPINDLE GEARBOX REPAIR

NOTE: Replacing gears, shafts, bearings, and seals may not be cost effective. Purchasing a complete gearbox may be more economical.

REMOVE GEARBOX FROM CUTTER

Refer to Figure 19.

1. Disconnect and remove the driveline from the gearbox.
2. Remove vent plug (3) and siphon gear lube from housing through this opening.
3. Remove cotter pin, washer, and nut from vertical shaft and remove crossbar (see Crossbar removal, page 33).

4. Remove the four bolts that attach gearbox to cutter and remove gearbox. Gearbox is heavy; do not attempt to move without mechanical assistance.

DISASSEMBLE GEARBOX

Refer to Figure 19.

1. Remove 3/8" plug from side of gearbox and pour out gear oil.
2. Remove oil cap (24) (to be replaced).
3. Remove snap ring (9) and shim (5) from input shaft (11).
4. Support gearbox in hand press and push on input shaft (11) to remove bearing (23).
5. Remove top cover (4) from housing. Remove gear (6) from inside housing.
6. Remove oil seal (10) from front of housing (to be replaced).
7. Remove snap ring (9) and shim (5) from front of housing (1).
8. Remove input bearing (7) by using a punch and hammer from outside of housing.
9. Support housing in vise in a horizontal position.
10. The castle nut (21), cotter pin (8), and washer (20) are already removed with the stump jumper/crossbar. Remove the protective screen (17) and seal (16).
11. Remove cotter pin (18), castle nut (12), and washer (25) from output shaft (19).
12. Remove output shaft (19) by using a punch and hammer and tap on top to drive down.
13. Remove gear (5) and shim (15) from inside housing.
14. Remove bearing (15) by using a punch and hammer from the top, outside the housing.
15. Support housing upside down (top cover surface) and remove bearing (15) by using a punch and hammer from the bottom side of the housing.
16. Inspect gears for broken teeth and wear. Some wear is normal and will show on loaded side. Forged gear surfaces are rough when new. Check that wear pattern is smooth.
17. Inspect vertical and horizontal shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.
18. Inspect housing and caps for cracks or other damage.

ASSEMBLE GEARBOX

Refer to Figure 19.

1. Clean housing, paying specific attention to areas where gaskets will be installed.
2. Wash housing and all components thoroughly. Select a clean area for gearbox assembly. Replace all seals, bearings, and gaskets. All parts must be clean and lightly oiled before reassembling.
3. Insert output bearings (15) in the housing, using a round tube of the correct diameter and a hand press.
4. Slide output shaft (19) through both bearings (15) until it rests against bearing (6).
5. Slide shim (5) over output shaft (19).
6. Press gear (13) onto output shaft (19) and secure with washer (25), castle nut (12), and cotter pin (18).
7. Apply grease to lower seal lips (16) and press seal (16) over output shaft (19), using a tube of the correct diameter. Be sure not to damage the seal lip.

Press in housing so that seal is recessed. Install protective screen (17) and position it together with dual lip seal (16) by pressing it into position. Verify that snap ring is seated correctly.
8. Press bearing (7) into the housing, using a round tube of the correct diameter and a hand press. Secure with shim (5) and snap ring (9).
9. Secure snap ring (9) on input shaft (11) if not already secure.
10. Place gear (6) through top of housing and align gear (6) and gear (13) so that gear teeth are a match.

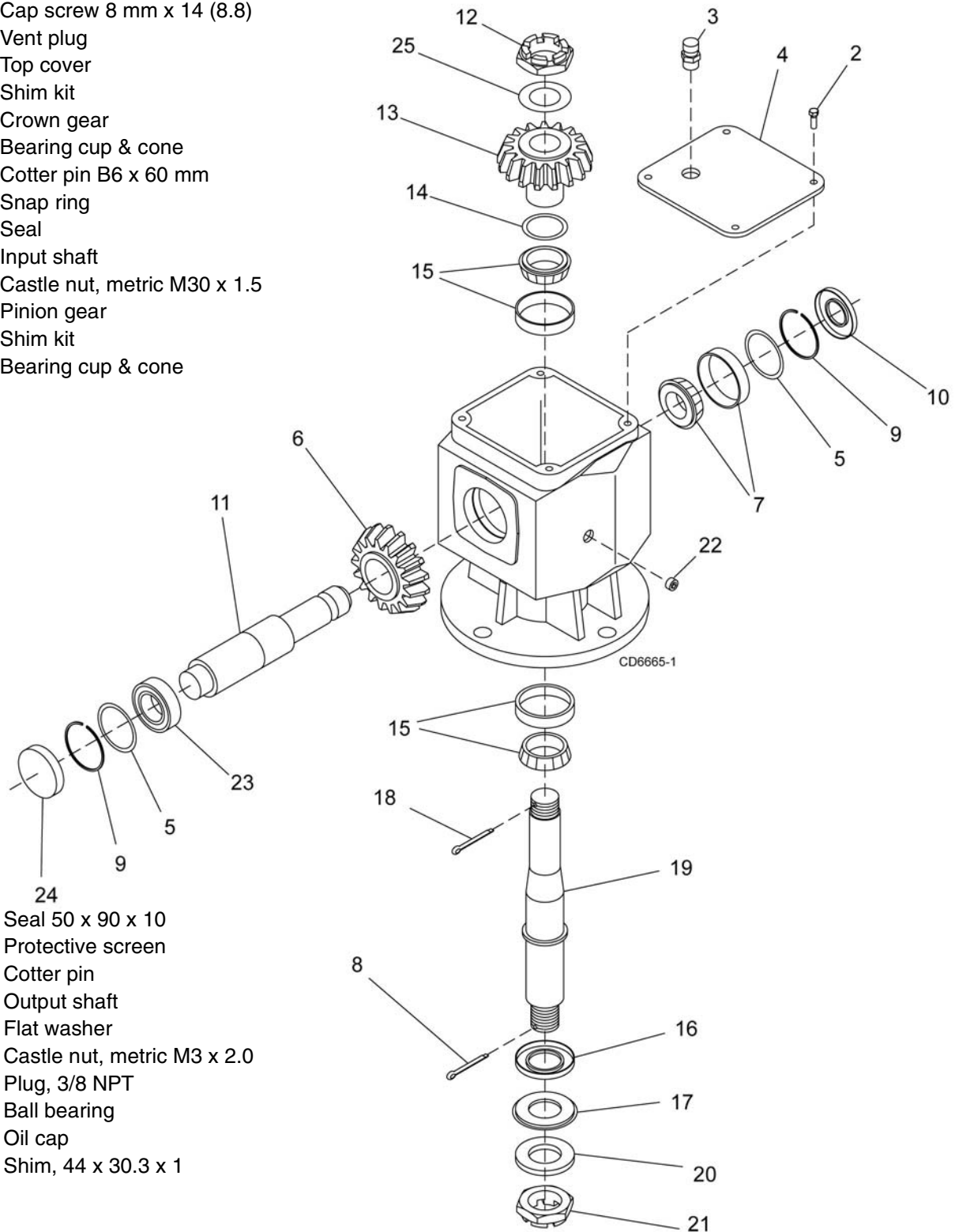
11. While holding gear (6) in place, slide input shaft (11) through gear (6) and bearing (7). Align splines on shaft (11) and gear (6).
12. Slide spacer (7) over input shaft (11) and press bearing onto input shaft (11), using a round tube of the correct diameter and a hand press.
13. Slide shim (5) over input shaft (11) and secure with snap ring (9).
14. Check input shaft end float by moving the input shaft (11) by hand. If end float is higher than 0.012", insert shim between input shaft (11) and rear bearing (7). Repeat until end float is less than 0.012". Check rotational torque by hand. The torque should be less than 2.2 lbs-inch.
15. Check that the gear backlash is between 0.006" and 0.016". You should not have to adjust the backlash.
16. Press in input oil seal (10), using tube of correct diameter. Be careful not to damage seal lip.
17. Press oil cap (24) on to cover the rear of housing, using a tube of the correct diameter.
18. Check gearbox housing for leaks by plugging all holes except one. Apply 4 psi compressed air and immerse the gearbox in water to verify that there are no leaks.
19. Remove gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of side level hole. Tighten all plugs.

REINSTALL GEARBOX

NOTE: Gearbox is heavy: do not attempt to move without mechanical assistance.

1. Set gearbox on cutter and fasten with bolts and nuts. Torque bolts to 300 lbs-ft.
2. Attach crossbar (see Crossbar removal on page 33).

1. Gearbox housing
2. Cap screw 8 mm x 14 (8.8)
3. Vent plug
4. Top cover
5. Shim kit
6. Crown gear
7. Bearing cup & cone
8. Cotter pin B6 x 60 mm
9. Snap ring
10. Seal
11. Input shaft
12. Castle nut, metric M30 x 1.5
13. Pinion gear
14. Shim kit
15. Bearing cup & cone



16. Seal 50 x 90 x 10
17. Protective screen
18. Cotter pin
19. Output shaft
20. Flat washer
21. Castle nut, metric M3 x 2.0
22. Plug, 3/8 NPT
23. Ball bearing
24. Oil cap
25. Shim, 44 x 30.3 x 1

Figure 19. Spindle Gearbox Assembly

SPLITTER GEARBOX REPAIR

NOTE: Replacing gears, shafts, bearings, and seals may not be cost effective. Purchasing a complete gearbox may be more economical.

REMOVE GEARBOX FROM CUTTER

1. Disconnect driveline from the tractor PTO and remove it from center gearbox.
2. Remove vent plug (6) and siphon gear lube from housing through this opening.
3. Disconnect and remove flex coupler drivelines from side of gearbox by:
 - a. Removing cap screws and hex nuts from drive-line.
 - b. Loosen set screws from flex coupler yoke.
 - c. Slide flex coupler yoke from gearbox shaft.
4. Remove the four bolts that attach gearbox to cutter and remove gearbox. Gearbox is heavy; do not attempt to move without mechanical assistance.

DISASSEMBLE SPLITTER GEARBOX

Refer to Figure 20.

1. Remove breather plug from top of gearbox.
2. Remove plug (19) from side of input housing (1) and pour out gear oil.
3. Remove eight cap screws (3) from around input housing (15). Remove input shaft assembly and housing.

4. Remove oil seals (11) (to be replaced) from both sides of cross shaft (4).
5. Remove eight cap screws (3) from around gearbox cover (12) and remove cross shaft (4) from gearbox.
6. Disassemble shims (5 & 18), spacer (20), bearings (16 & 13), and crown gear (7) from cross shaft.
7. Support housing in a vise and remove bearing cones (16) by using a punch and hammer to drive bearing cone out.
8. Support cover (12) in a vise and remove bearing cups (13) by using a punch and hammer to drive bearing cone out.
9. Remove lock nut (2) from end of input shaft (14).
10. Support input housing in a handpress and push input shaft (14) out of housing.
11. Support housing in a vise and remove bearing cups (13 & 16) by using a punch and hammer to drive bearing cones out.
12. Inspect gears for broken teeth and wear. Some wear is normal and will show on loaded side. Forged gear surfaces are rough when new. Check that wear pattern is smooth.
13. Inspect input and cross shafts for grooves, nicks, or bumps in the areas where the seals seat. Resurface any damage with emery cloth.
14. Inspect housing and caps for cracks or damage.

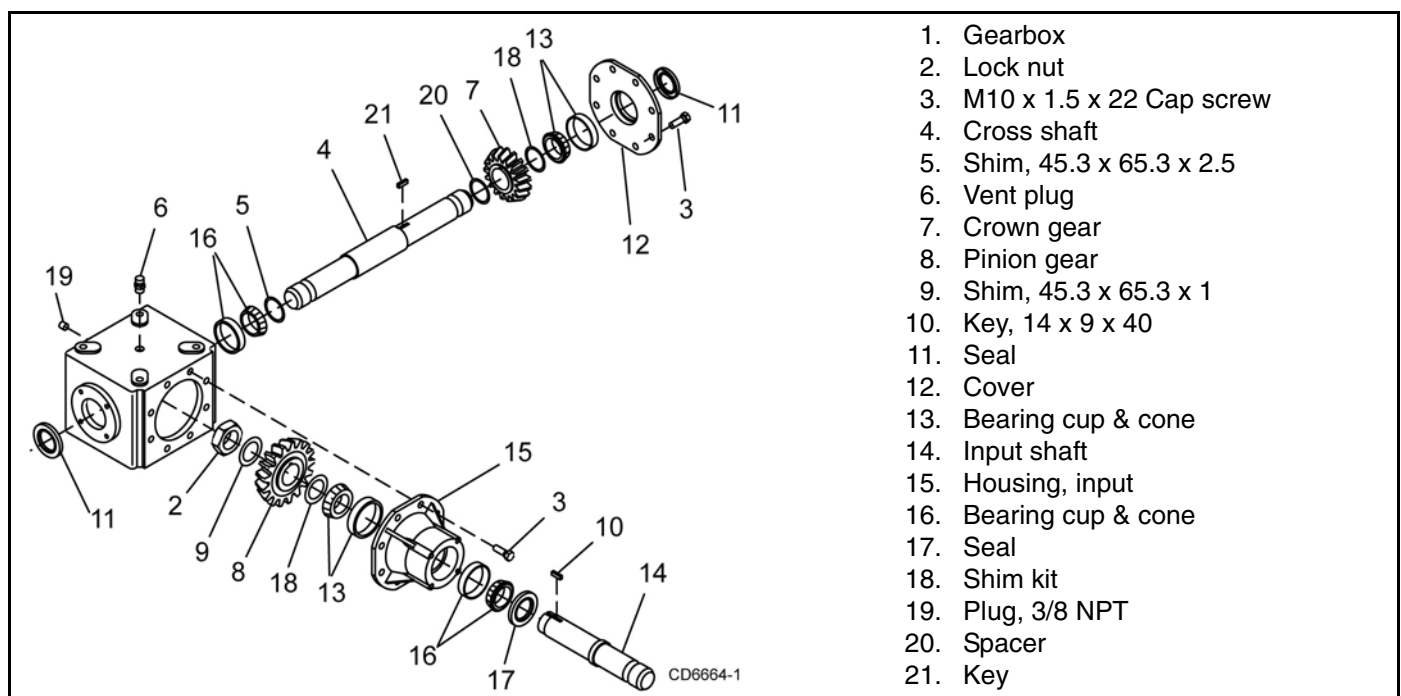


Figure 20. Center Gearbox Assembly

ASSEMBLE GEARBOX

Refer to Figure 20.

1. Clean housing, paying specific attention to areas where gaskets will be installed.
2. Wash housing and all components thoroughly. Select a clean area for gearbox assembly. Replace all seals, bearings, and gaskets. All parts must be clean and lightly oiled before reassembling.
3. Install new bearing cup (16) in gearbox housing and bearing cup (13) in cover if these parts were previously removed.
4. Place bearing (16) and shim (5) on end of cross shaft (4), and insert shaft into housing.
5. Install spacer (20), key (21), crown gear (7), shim (18), and bearing (13) on opposite end of cross shaft.
6. Place cover (12) over bearings (13) and secure into position using eight cap screws (3). Torque cap screws to 29 lbs-ft.
7. Place seal (11) over cross shaft and press into housing. Use a round tube the same diameter of the seal and a handpress. Repeat process on opposite side of gearbox.
8. Install new bearing cup (16 & 13) into input housing if these parts were previously removed.
9. Place bearing (16) over end of input shaft (14) and insert shaft into front of input housing.
10. Place seal (17) over shaft and press into housing. Use a round tube the same diameter of the seal and a handpress.
11. Install bearing (13), shim (18), pinion gear (8), key (10), shim (9) over opposite end of input shaft (14).
12. Secure parts together using lock nut (2). Tighten lock nut (2) until shaft rolling torque is 3 to 9 lbs-inch.
13. Insert input housing assembly into front of gearbox housing and align teeth of the two gears. Secure with cap screws (3). Torque cap screws to 29 lbs-ft.
14. Check gear backlash; it should be .006" to .017" at outer tooth.
15. Check gearbox housing for leaks by plugging all holes except one. Apply 4 psi compressed air and immerse the gearbox in water to verify that there are no leaks.
16. Remove gearbox from water and dry off with compressed air. Add SAE 80W or 90W EP oil until it runs out of the lower level hole in front cover. Tighten all plugs.

REINSTALL GEARBOX

NOTE: Gearbox is heavy: do not attempt to move without mechanical assistance.

1. Install flex coupler driveline between side gearboxes and center gearbox.
2. Set gearbox on cutter and fasten with bolts and nuts. Torque bolts to 300 lbs-ft.

SIDE DRIVE SERVICE

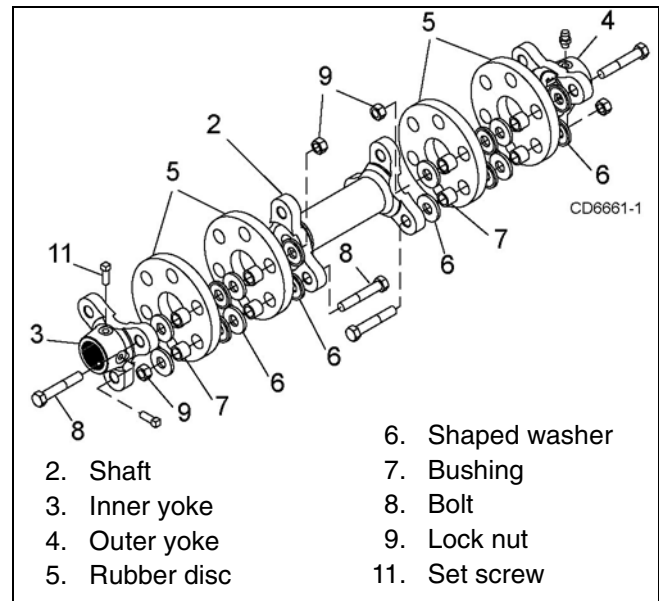


Figure 21. Side Drive Assembly

The drives between the center and side gearboxes contain rubber shock-absorbing discs. To service or remove the side drives or remove a gearbox, the flexible coupling must be disassembled.

Remove end yokes by removing nuts (9) and sliding bolt (8) inward to clear yoke. Do not remove bolt unless rubber discs (5) are to be serviced. Remove complete center section by lifting straight up on center shaft (2). The outer yoke can be slid off gearbox shaft. The inner yoke is held by two set screws (11).

Reassemble shaft as shown in Figure 21. End yokes (3 & 4) do not bolt directly to center shaft (2). Use the special formed washer (6) and bushings (7) between the rubber discs (5) and under bolt head or nut near rubber disc. Tighten the nuts (9) evenly until the formed washers (6) are slightly embedded into the rubber discs. Rubber discs (5) will warp and twist if bolts are over-tightened. Tighten set screw (11).

NOTE: Crossbar must be re-timed anytime a crossbar or a side drive is disconnected.

CROSSBAR REMOVAL

1. It is necessary to gain access to bottom side of cutter for crossbar removal. See BLOCKING METHOD, page 21.

NOTE: You will need to use either the puller screw (Item 6, Figure 23) or a small hydraulic jack to remove the crossbar.

2. To make crossbar removal easier, remove blades as shown in Figure 22.

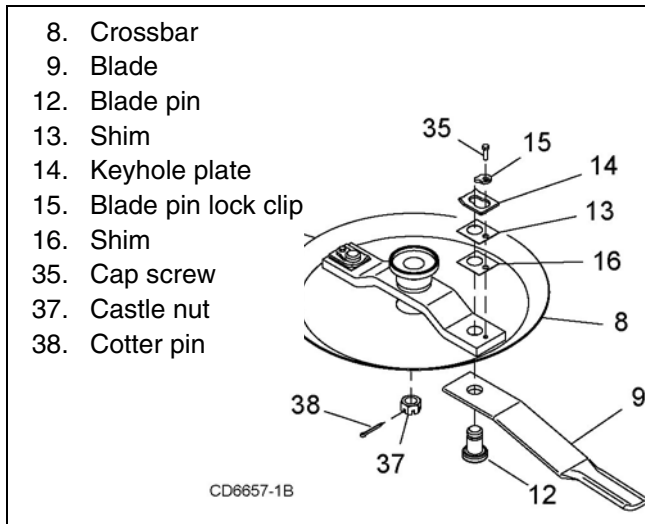


Figure 22. Blade Removal

3. Remove cotter pin (38) and castle nut (37) from bottom of crossbar.

4. **Refer to Figure 23.** Attach a clevis (1) to each end of crossbar, using blade pins, spacers, keyhole plates, and blade pin clips.

5. Position tube assembly (5) with threaded nut toward crossbar for puller screw removal or down for hydraulic jack removal.

6. For removal with puller screw, attach tube (5) to each clevis with screws (2) and nuts (3). Place pad (4) in nut and thread puller screw (6) into nut from bottom. Tighten until pad is solid against gearbox shaft. For best results, strike head of puller screw with a hammer while tightening with a wrench.

7. For removal with a jack, attach tube to each clevis with puller links (7), screws (2), and nuts (3). Place jack on tube with end of jack pressing against gearbox shaft. Slowly apply force with jack.

NOTE: Hydraulic jack will not operate if tipped more than 90-degrees. Use care to prevent bending crossbar during removal.

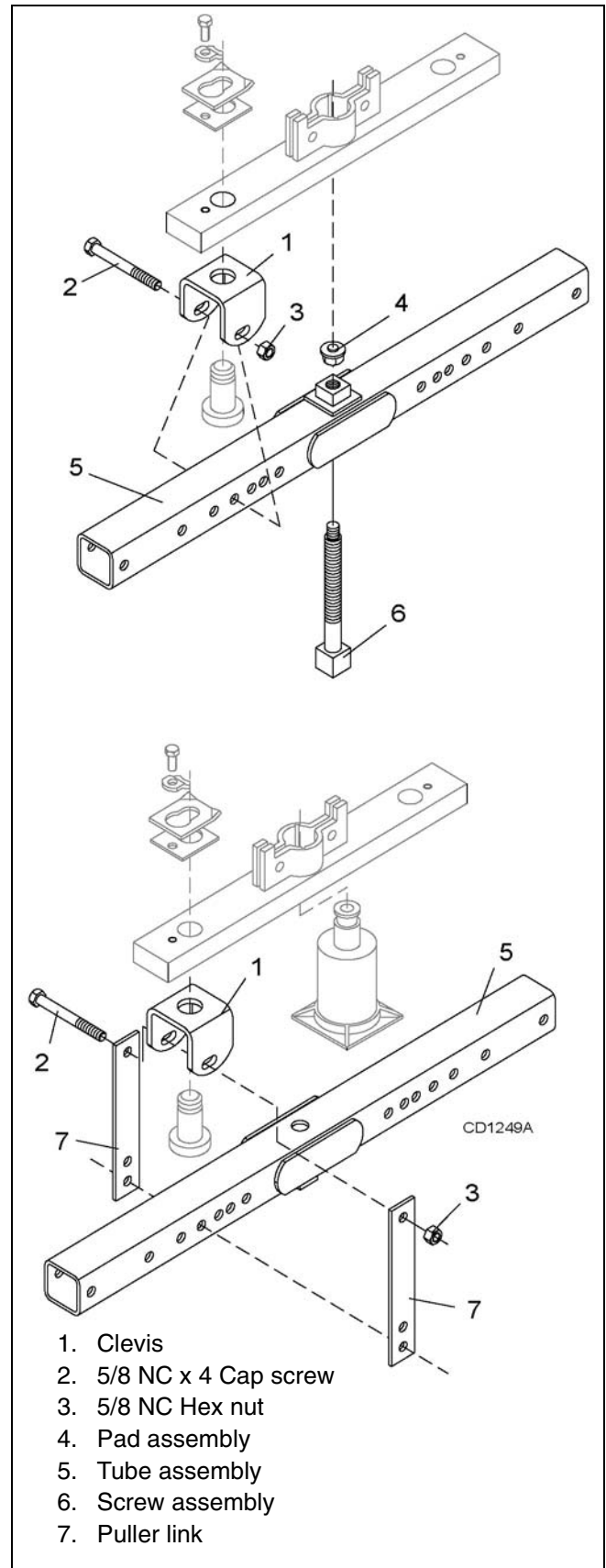


Figure 23. Crossbar Removal

CROSSBAR INSTALLATION

1. Using emery cloth (220 or finer), remove surface rust, and foreign material from hub, splined gearbox vertical shaft, and crossbar. See Figure 24.

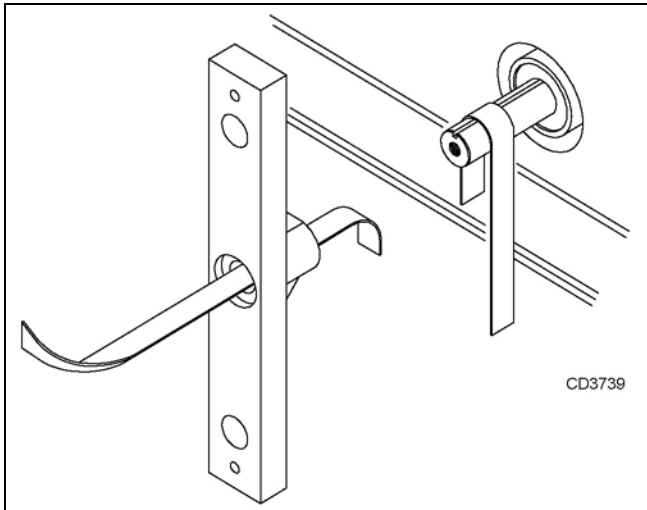


Figure 24. Example of Crossbar and Gearbox Shaft

2. Install crossbar (8), Figure 22, on splined shaft. Install castle nut (37) and cotter pin (38). Torque nut to 450 lbs-ft.
3. Install blades, reinstall them using existing hardware. Torque cap screws to 85 lbs-ft.

CROSSBAR TIMING

Crossbar must be re-timed anytime a crossbar or a side drive is disconnected.

1. To re-time crossbars, position bars as shown in Figure 25.
2. The right crossbar will be at right angles to the front of the cutter.
3. Measure from the front of the cutter to the blade pin on each side crossbar.
4. Hold crossbars in position while connecting the side drivelines.

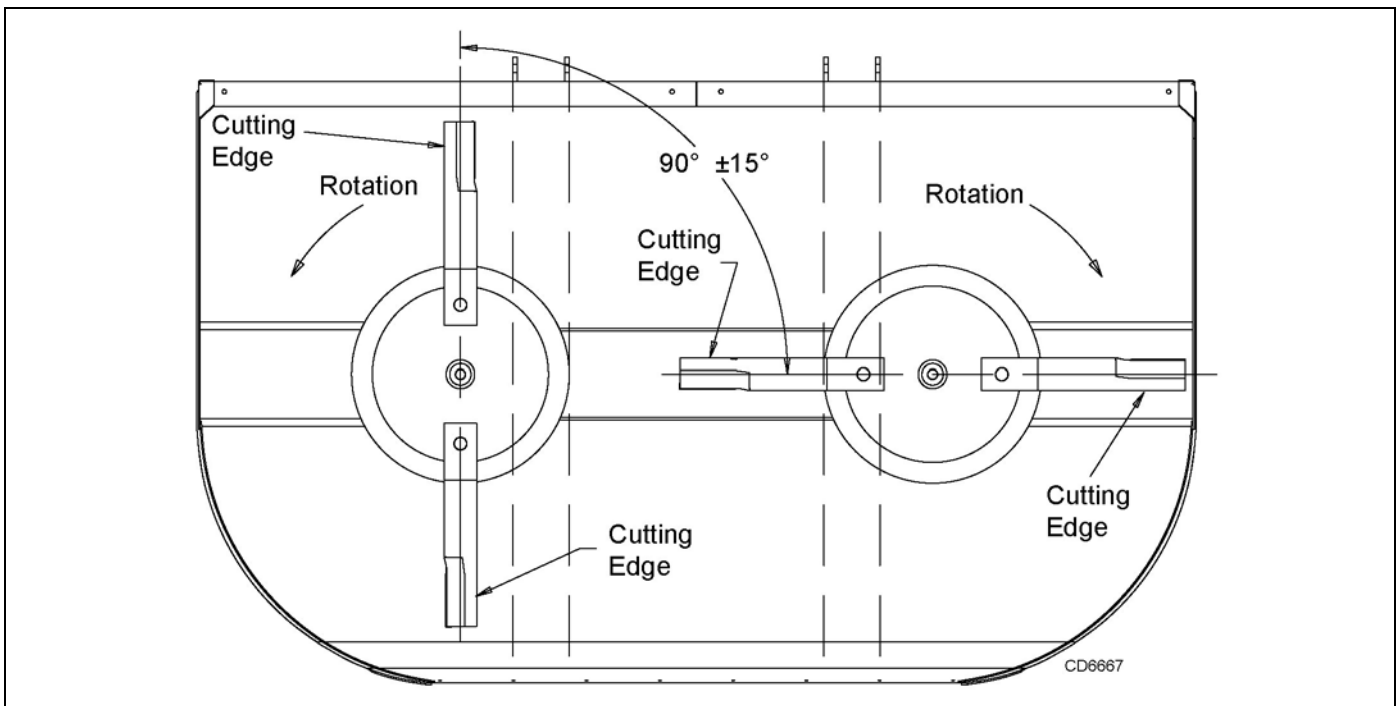


Figure 25. Crossbar Timing - Bottom View

UNIVERSAL JOINT REPAIR

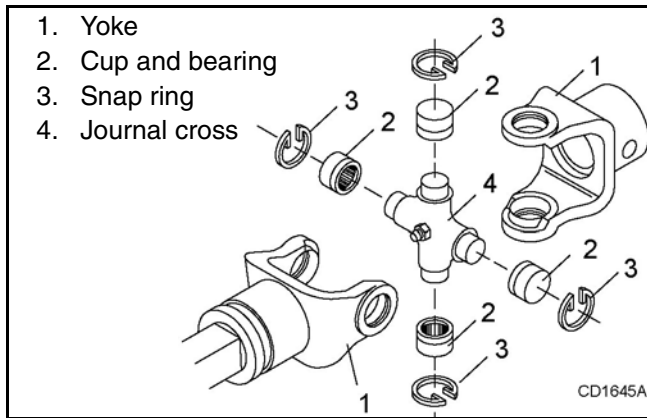


Figure 26. Universal Joint Parts Breakdown

U-JOINT DISASSEMBLY

1. Remove external snap rings from yokes in four locations as shown in Figure 27.

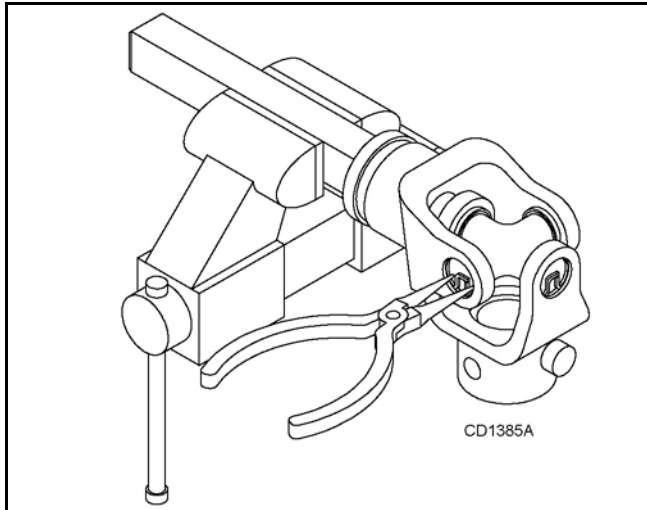


Figure 27. Remove Snap Ring

2. With snap rings removed, support drive in vise, hold yoke in hand and tap on yoke to drive cup up out of yoke. See Figure 28.

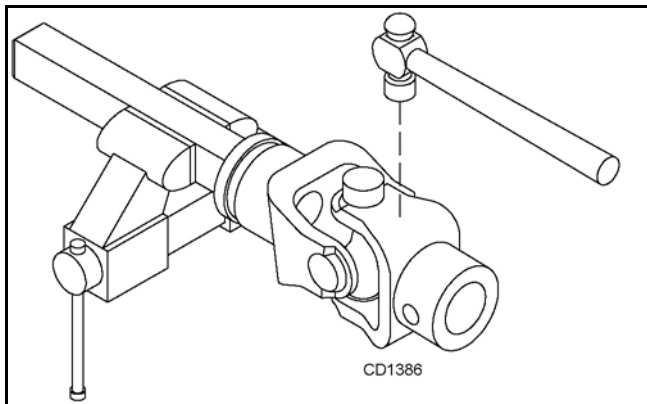


Figure 28. Remove Cups

3. Clamp cup in vise as shown in Figure 29 and tap on yoke to completely remove cup from yoke. Repeat Step 2 and Step 3 for opposite cup.

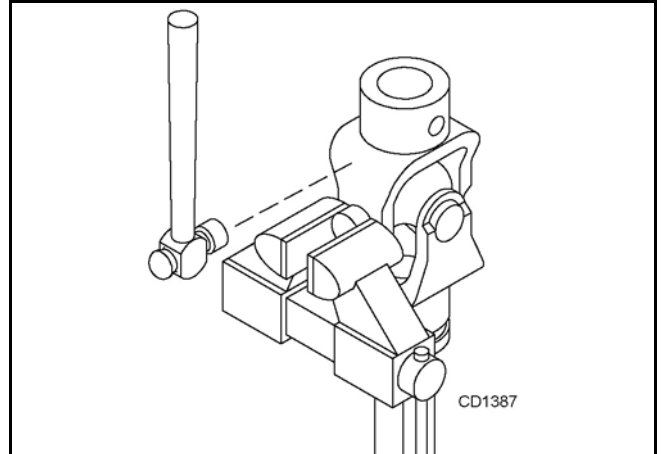


Figure 29. Remove Cups

4. Place universal cross in vise as shown in Figure 30 and tap on yoke to remove cup. Repeat Step 3 for final removal. Drive remaining cup out with a drift and hammer.

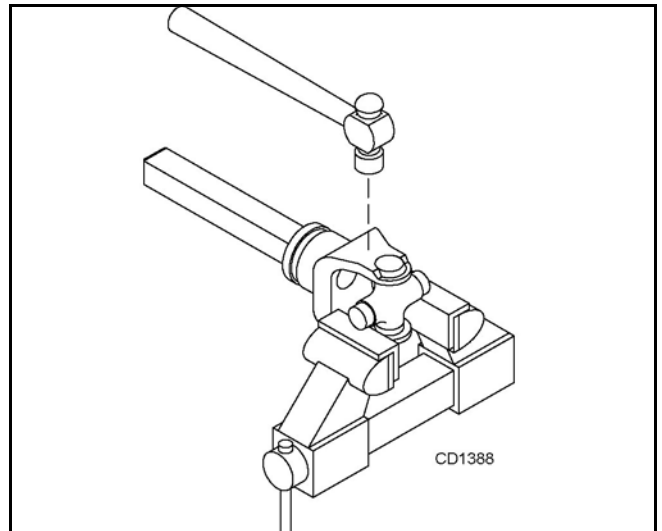


Figure 30. Remove Cups

U-JOINT ASSEMBLY

1. Place seals securely on bearing cups. Insert cup into yoke from outside and press in with hand pressure as far as possible. Insert journal cross into bearing cup with grease fitting away from shaft. Be careful not to disturb needle bearings. Insert another bearing cup directly across from first cup and press in as far as possible with hand pressure.
2. Trap cups in vise and apply pressure. Be sure journal cross is started into bearings and continue pressure with vise, squeezing in as far as possible. Tapping the yoke will help.

3. Seat cups by placing a drift or socket (slightly smaller than the cup) on cup and rap with a hammer. See Figure 31. Install snap ring and repeat on opposite cup
4. Repeat Step 1 and Step 2 to install remaining cups in remaining yoke.
5. Move both yokes in all directions to check for free movement. If movement is restricted, rap on yokes sharply with a hammer to relieve any tension. Repeat until both yokes move in all directions without restriction.

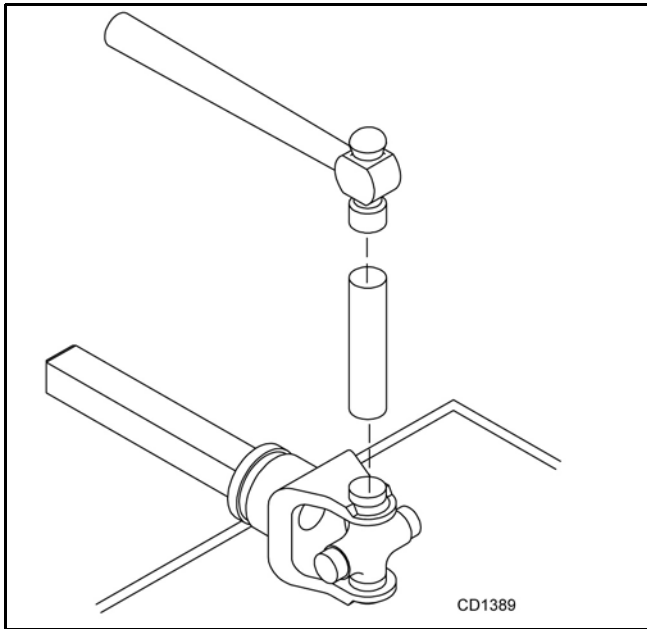


Figure 31. Install Cups

SERVICING TIRES SAFELY

Used Aircraft Tires (Figure 32)

⚠ WARNING



■ Explosive separation of tire and rim parts can cause serious injury or death. Release all air pressure before loosening bolts.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure and result in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and an extension hose long enough to allow you to stand to the side — not in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims, or missing lug bolts and nuts.

Never remove split rim assembly hardware (A) with the tire inflated.



Figure 32. Split Rim Tire Servicing

ASSEMBLY INSTRUCTIONS

DEALER SET-UP INSTRUCTIONS

DANGER

■ Full chain or rubber shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain or rubber shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

WARNING

■ Make sure spring-activated locking pin or collar slides freely and is seated firmly in tractor PTO spline groove.

CAUTION

■ Always wear relatively tight and belted clothing to avoid getting caught in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head; and respirator or filter mask where appropriate.

These instructions are for the assembly of the DS96 and DS120 mounted and pull-type cutters. Many of the procedures apply to all units. When an instruction applies to a specific unit, the section heading will indicate which unit. Assembly of options may not apply to all units.

Assembly of this cutter is the responsibility of the Woods dealer. It should be delivered to the owner completely assembled, lubricated, and adjusted for normal cutting conditions.

The cutter is shipped partially assembled. Assembly will be easier if aligned and loosely assembled before tightening hardware. Recommended torque values for hardware are located in the Bolt Torque Chart, page 73.

Select a suitable working area. A smooth hard surface, such as concrete, will make assembly much quicker. Open parts boxes and lay out parts and hardware to make location easy. Refer to illustrations, accompanying text, parts lists and exploded view drawings.

Complete check lists on page 49 when you have completed the assembly.

ASSEMBLE - DS96 PULL-TYPE CUTTER REAR HALF

Refer to Figure 33.

Place jackstands under cutter to raise it off the ground to provide clearance when assembling cutter. See "BLOCKING METHOD" on page 21 for jackstand placement.

Install Rear Tailwheel

1. Attach tailwheel (1) to the rear of the cutter using two clevis pins (13) and cotter pins (35).
2. Insert wheel hubs (2) to the outer mounting tubes of tailwheel. Secure with cap screws (33) and flange lock nut (34). **NOTE:** Inner mounting tubes are for adding a second set of wheels.
3. Attach solid or aircraft tires to wheel hubs using four cap screws (31) and lock washers (32).
4. Attach rims and pneumatic tires (pneumatic tires are not furnished) to wheel hubs using four wheel bolts (30).

Install Attitude Rod

Slide attitude rod (5) under left spindle driveline and through pivot block on the tailwheel. Loosely install spacers (6), washers (37) and two hex nuts (36).

Install Height Adjustment Device

Ratchet

Install ratchet (12) between cylinder lug on tailwheel and lug on deck. Secure with pins supplied with ratchet.

Cylinder

1. Place hydraulic cylinder (8) between lug on tailwheel and lug on deck.
2. Secure to deck lug using pin (15) and two cotter pins (35).
3. Extend cylinder rod, place transport lock bracket (7) over cylinder rod end and lug on tailwheel.
4. Align holes of cylinder rod, transport lock bracket (7) and lug on tailwheel. Secure assembly using pin (16) and two cotter pins (35).

Install Hydraulic Hose

⚠ WARNING

■ On pull-type units with optional hydraulic cutting height adjustment, use a single-acting cylinder with a maximum extended length of 28-1/4" (718 mm) from attaching point center to center.

NOTICE

■ If using a cylinder other than the one supplied by Woods, make sure a breather fitting is installed

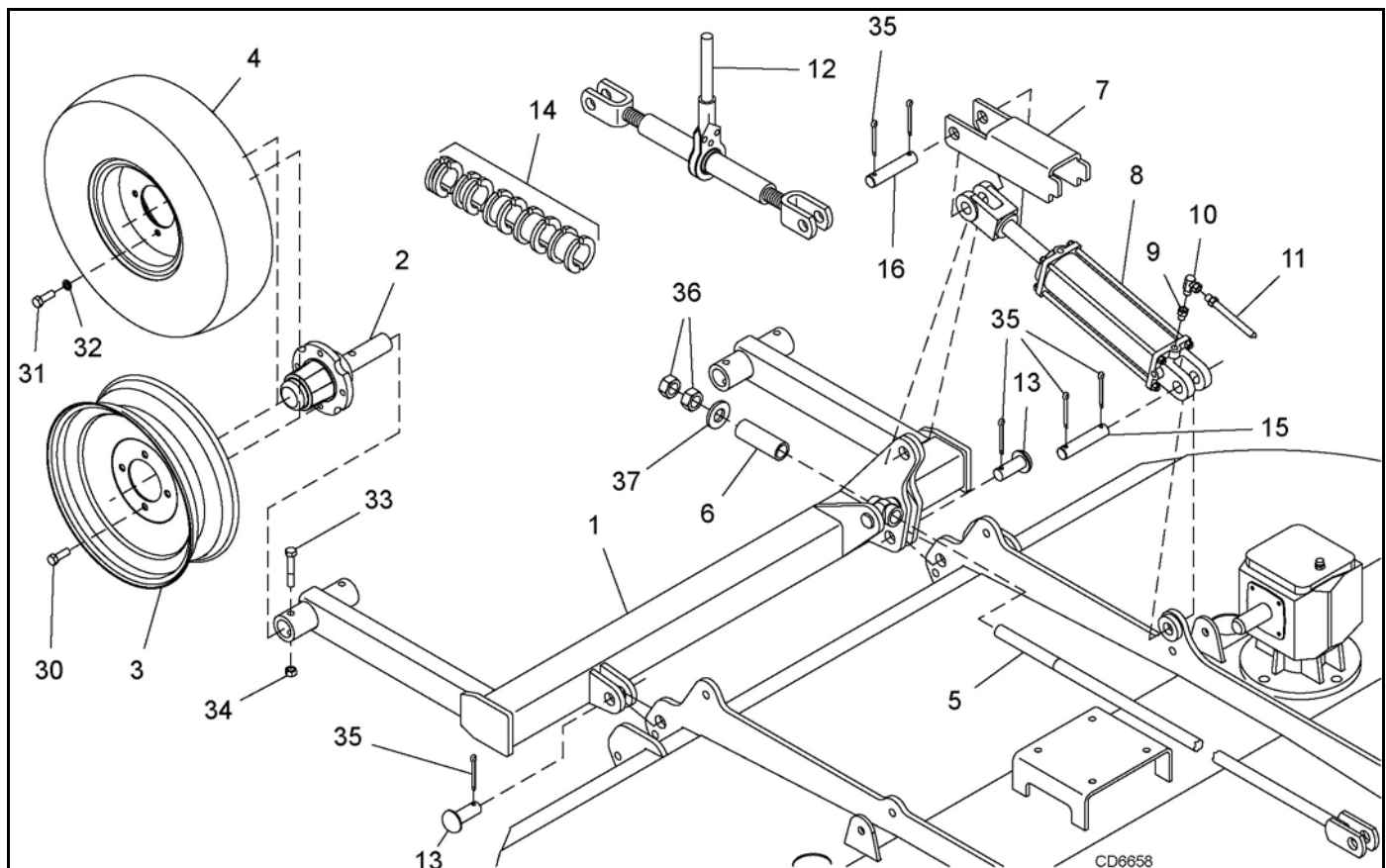
in the cylinder rod end port. Use a restrictor fitting in the base end port to dampen the cutter lowering action.

1. Install reducer bushing (9) and restrictor swivel elbow (10) in port at base end of cylinder (8). Position elbow to point toward front of cutter.

NOTE: Make sure there is a breather fitting installed in the rod end port.

2. Connect hose (11) to elbow (10).

3. Install optional stroke control kit (14) to cylinder rod. Stroke control kit is used to set cut height.



- | | | |
|---------------------------|-----------------------------|--------------------------------|
| 1. Tailwheel | 7. Transport lock-up | 16. Headless pin, 1 x 4 |
| 2. Wheel hub | 8. Hydraulic cylinder | 30. Wheel bolt, 1/2 NF x 1-1/8 |
| 3. 15" Steel rim | 9. Reducer | 31. Cap screw, 1/2 NF x 1 |
| 4. 21" Solid tire -or- | 10. Elbow, restrictor | 32. Lock washer, 1/2 |
| 4. 22" Aircraft tire -or- | 11. Hose, 156" | 33. Cap screw, 1/2 NC x 3 |
| 4. 29" Aircraft tire | 12. Ratchet | 34. Flange lock nut, 1/2 NC |
| 5. Attitude rod | 13. Clevis pin, 1.0 x 2.26 | 35. Cotter pin, 1/4 x 1-1/2 |
| 6. Spacer | 14. Stroke control kit | 36. Hex nut, 1 NC |
| | 15. Headless pin, 1 x 4-1/2 | 37. Flat washer, 1" |

Figure 33. DS96 Pull-Type Rear Half Installation

ASSEMBLE - DS120 PULL-TYPE CUTTER REAR HALF

Refer to Figure 35.

Place jackstands under cutter to raise it off the ground to provide clearance when assembling cutter. See "BLOCKING METHOD" on page 21 for jackstand placement.

Install Rear Tailwheel

1. Attach tailwheel arms (1) to the tailwheel using eight (four per wheel arm) cap screws (35) and lock nuts (36). **NOTE:** Position tailwheel arms on tailwheel to desired location (usually on row crop centers). Wheel hubs should be positioned to the outside of the cutter.
2. Attach solid or aircraft tires to wheel hubs using four cap screws (31) and lock washers (32).
3. Attach rims and pneumatic tires (pneumatic tires are not furnished) to wheel hubs using four wheel bolts (30).

Install Attitude Rod

Slide attitude rod (5) under left spindle driveline and through pivot block on the tailwheel. Loosely install spacer (6), washer (37) and two hex nuts (38).

Install Spring Arm

1. Attach spring arm (13) to cylinder (8) or ratchet (12) using pin (15).
2. Place spring arm (13) and spring (14) on deck as shown. Secure spring arm (13) to spring arm lugs (on the cutter) using pin (16) and two cotter pins (40). Install retaining cap screw (39) and flange lock nut (34).

Install Height Adjustment Device

Ratchet

Attach ratchet (12) to tailwheel lug and secure with pin (17) and two cotter pins (40).

Cylinder

1. Place hydraulic cylinder (8) between lug on tailwheel.
2. Extend cylinder rod, place transport lock bracket (7) over cylinder rod end and between lugs on tailwheel.
3. Align holes of cylinder rod, transport lock bracket and lugs on tailwheel. Secure assembly using pin (17) and two cotter pins (40).

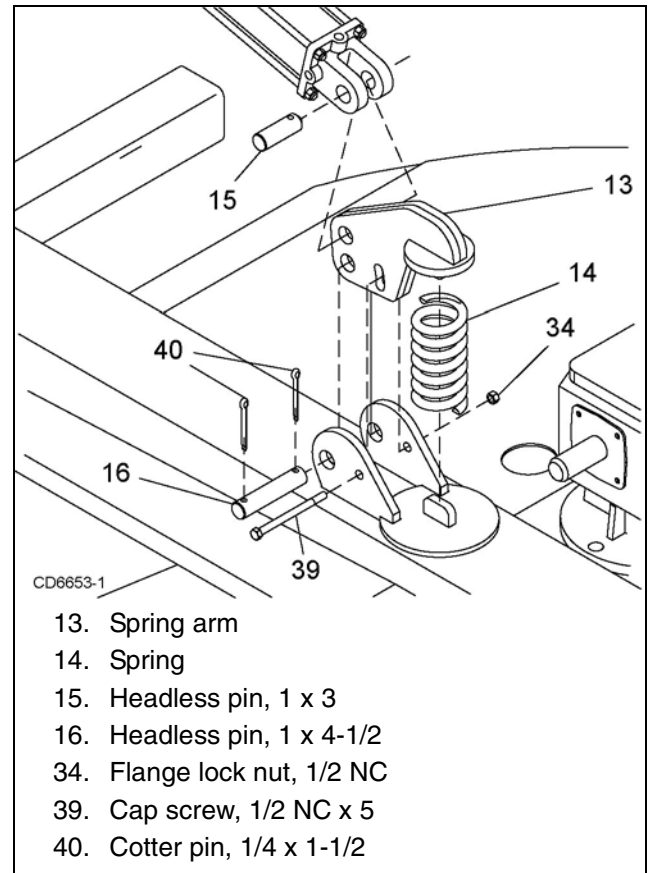


Figure 34. Spring Arm Installation

Install Hydraulic Hose



- On pull-type units with optional hydraulic cutting height adjustment, use a single-acting cylinder with a maximum extended length of 28-1/4" (718 mm) from attaching point center to center.

NOTICE

- If using a cylinder other than the one supplied by Woods, make sure a breather fitting is installed in the cylinder rod end port. Use a restrictor fitting in the base end port to dampen the cutter lowering action.

1. Install reducer bushing (9) and restrictor swivel elbow (10) in port at base end of cylinder (8). Position elbow to point toward front of cutter.

NOTE: Make sure there is a breather fitting installed in the rod end port.

2. Connect hose (11) to elbow (10).
3. Install optional stroke control kit (18) to cylinder rod. Stroke control kit is used to set cut height.

DS120 Pull-Type - Rear Half

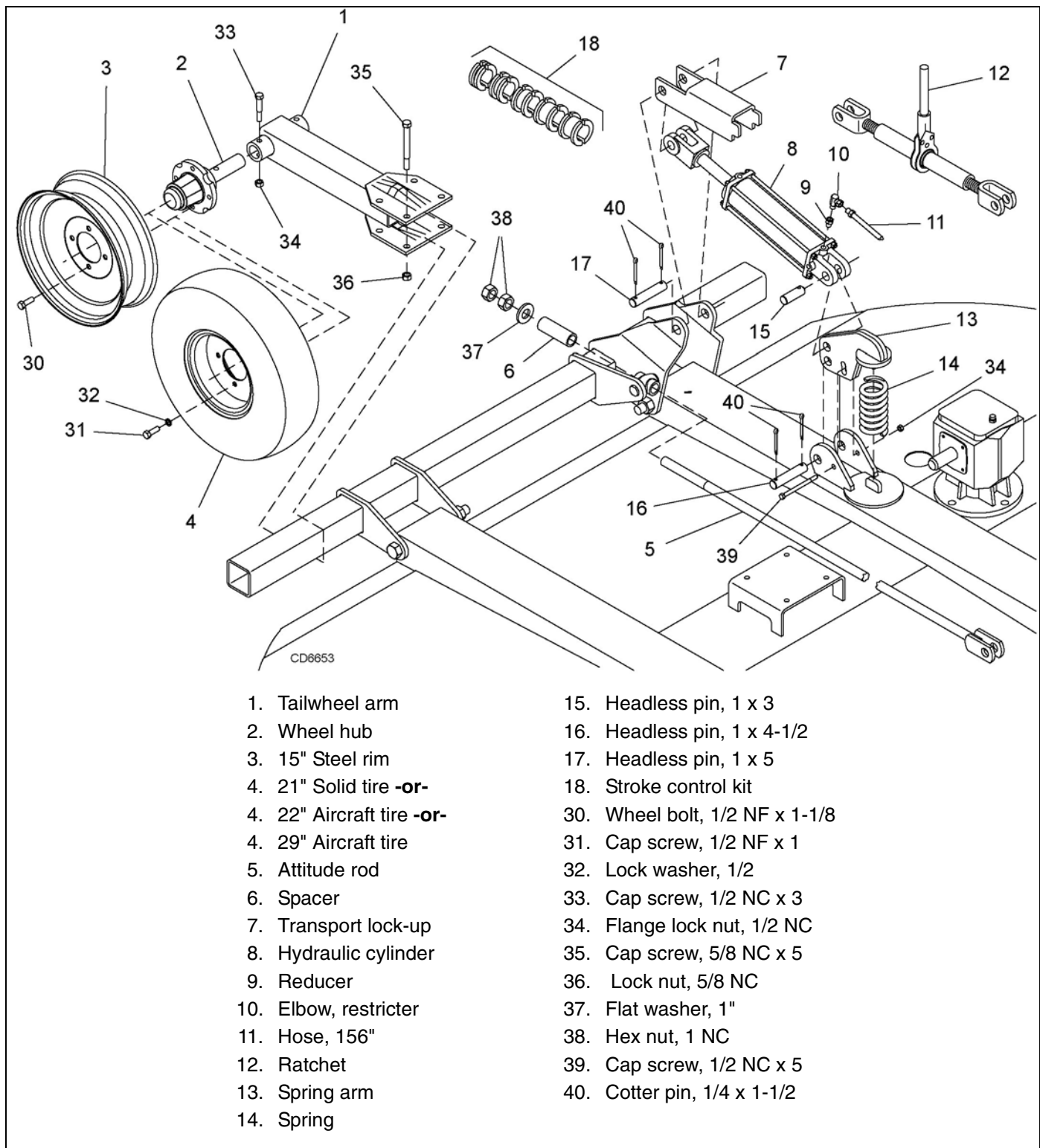


Figure 35. DS120 Pull-Type Rear Half Installation

INSTALL TONGUE DS96 & DS120 CUTTERS

Refer to Figure 36.

1. Place tongue (1) between inner mast plates.
NOTE: DS96 only has one set of mast plates. Figure 36 shows the DS120 cutter frame.
2. Place washer (46) and sleeve (16) on cap screw (44).
3. Place washer (47) between mast plates and tongue, insert cap screw (44) with washer (46) and sleeve (16) through mast plate and tongue. **NOTE:** Washers (47) are only required on DS120 cutters.
4. Secure with second washer (46) and lock nut (45).
5. Attach front half of attitude rod to lug on tongue using clevis pin (17) and cotter pin (48).
6. Raise front of cutter and install parking jack (6) to support tongue.
7. Attach safety tow chain (5) to tongue using cap screw (44), washer (47), and lock nut (45). Be sure chain links do not interfere with tractor drawbar.

INSTALL 3-JOINT DRIVELINE

Install Driveline

Refer to Figure 36.

1. Coat input shaft of gearbox shaft with light coating of grease.
2. Attach slip clutch on driveline (9) to input shaft of gearbox. Tighten cap screws (33) and lock nut (34).
3. Attach rear tether chain on driveline to clip on plastic gearbox shield.

Install H-Frame

1. Place H-frame (2) over front of tongue and align holes.

2. Secure H-frame to tongue using cap screw (42), two sleeve (3), two cup washers (4) and lock nut (43).

Attach Driveline to H-frame

NOTE: Select holes in H-frame that will allow driveline to run level. Refer to Operation section for driveline height. Final adjustment will be necessary when cutter is attached to the tractor.

Place driveline bearing carrier between H-frame (2) and secure with clevis pin (7) and cotter pin (49).

Install Front Drive

1. Slide rear yoke of front driveline (8) over shaft of driveline (9) and align with notch on shaft.
2. Secure drives together using cap screw (39) and lock nut (38).
3. Attach tether chain on front half of driveline (8) to H-frame (2).

Install Drive Shield & Hose Holder

1. Attach drive shield (13) to driveline carrier bearing using two cap screws (35) and lock washers (36).
2. Attach hydraulic hose holder (15) to the top hole in H-frame (2) with cap screw (41), sleeve (14), and lock nut (40).

Install SMV Bracket

1. Attach SMV bracket (19) to the top of center gearbox using two cap screws (32).
2. Attach SMV emblem (20) to SMV bracket using two round head cap screws (30) and hex nuts (31).

Tongue and Driveline Installation

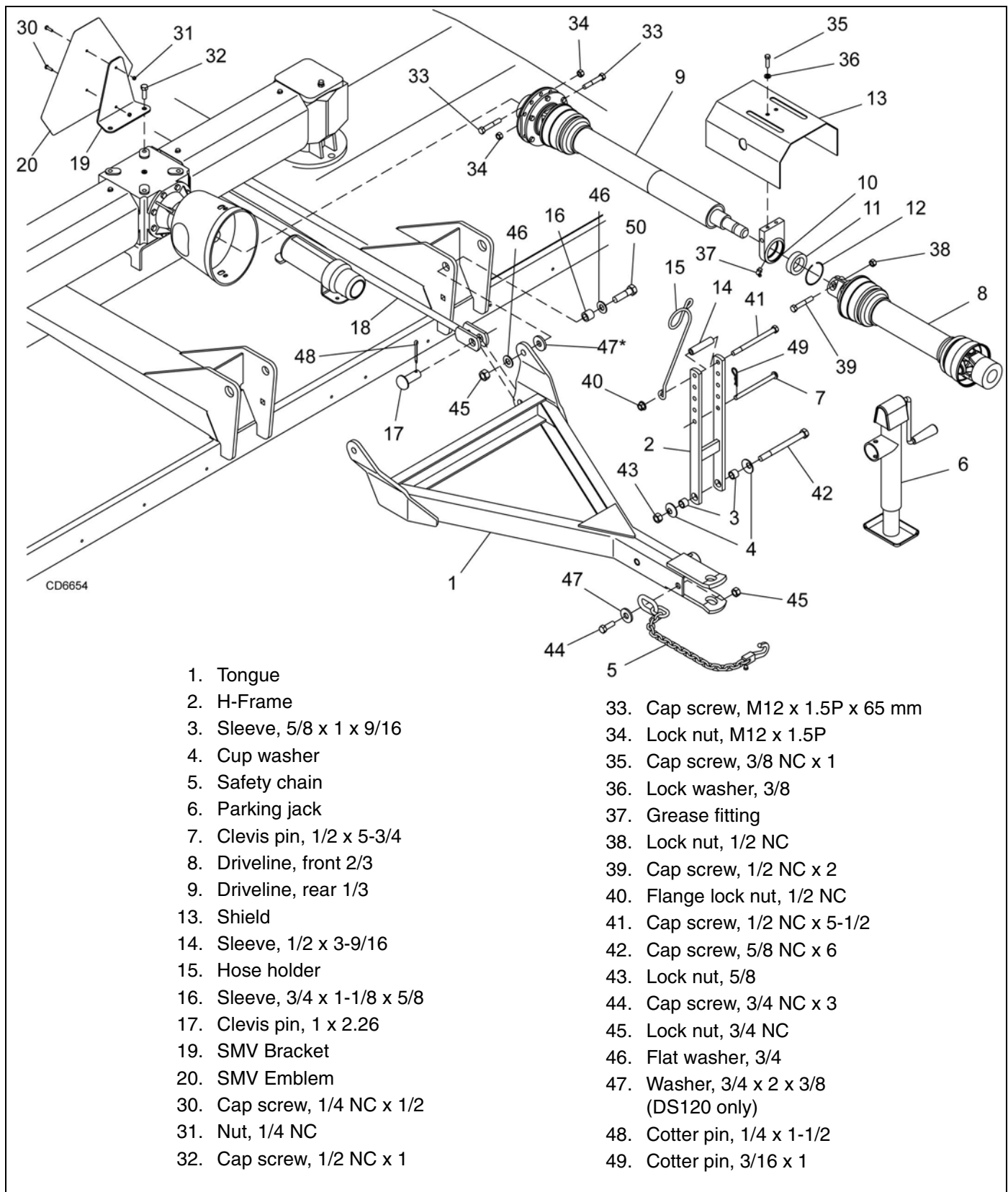


Figure 36. DS96 and DS120 Tongue and Driveline Installation

ASSEMBLE - DS96 MOUNTED CUTTER

Refer to Figure 39.

Place jackstands under cutter to raise it off the ground to provide clearance when assembling cutter. See "BLOCKING METHOD" on page 21 for jackstand placement.

Install A-Frame

1. Attach front A-frame bars (3) to the top of the cutter mast plates using hitch pins (4), bushing sleeves (11), washers (41), slotted hex nuts (42), and cotter pins (39).
2. Torque hex nuts to 400 lbs-ft.

Refer to Figure 37 and Figure 39

3. Attach rear A-frame bars (2) to the mounting lugs on the rear of the cutter using cap screws (31) and lock nuts (32).
4. Attach the two rear A-frame bars together at the top rear hole using cap screw (33), spacer sleeve (9), and lock nut (32).
5. Place both break links (7) together and position between front hole of rear A-frame bars. Secure rear A-frame bars and break links together using cap screw (33), spacer sleeve (9), and lock nut (32). **NOTE:** Break links must rest on top of rear spacer sleeve (9).
6. Place spacer sleeve (6) through front holes of break links. Align break links with bottom holes on front A-frame bars (3) and secure together using cap screw (37) and lock nut (38).
7. Install top link pin (10) and sleeve (8) into top holes of A-frame. Secure with cotter pin (39) and klik pin (40). Sleeve (8) is used with category 2 top links.

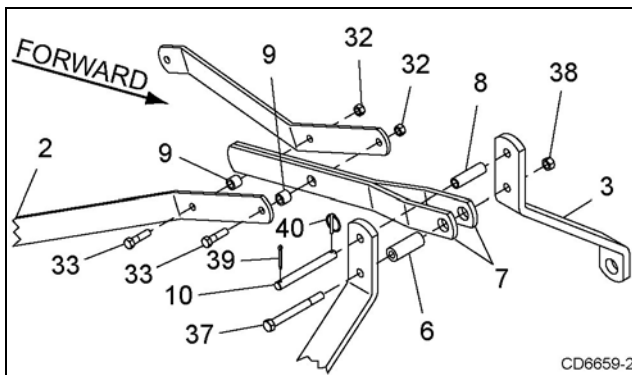


Figure 37. Break Linkage Installation

Install Tailwheel Arms

Refer to Figure 38 and Figure 39.

1. Attach adjustment arms (13) to lower holes of lugs on the rear of the cutter. Braces must be placed on the inside of mounting lugs (Figure 38).
2. Secure each adjustment brace with a cap screw (31) and lock nut (32).
3. Attach tailwheel arms (1) between deck rail and lug near the middle of the cutter. Secure into position using cap screws (30), two washers (12), and lock nut (32). **NOTE:** See Figure 39 for washers (12) placement.
4. Align holes on adjustment arms (13) with a hole in the tailwheel arm and insert cap screw (30). Secure with lock nut (32). **NOTE:** Hole positions in tailwheel arms determines cutting height. Final adjustment will be necessary when cutter is mounted to the tractor.

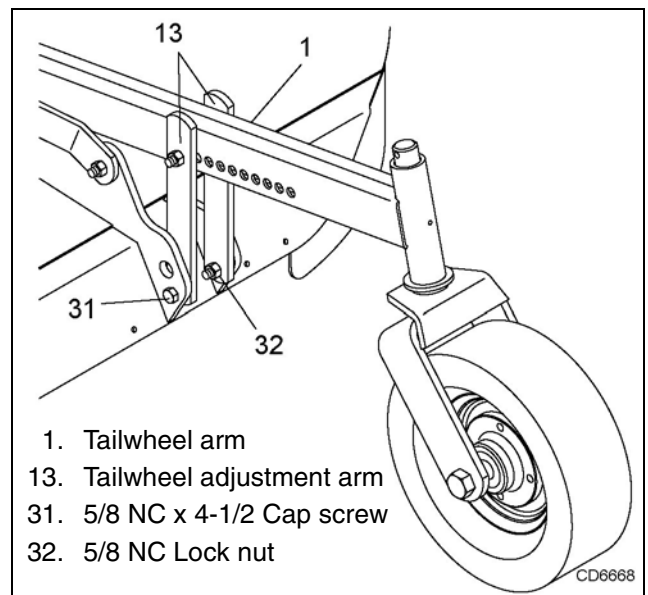


Figure 38. Adjustment Arm Installation

Install Driveline

1. Coat input shaft of gearbox with a light coating of grease.
2. Attach slip clutch on driveline (5) to input shaft of gearbox. Tighten cap screws (35) and lock nut (36).
3. Attach rear tether chain of driveline to driveline shield.

DS96 Mounted Assembly

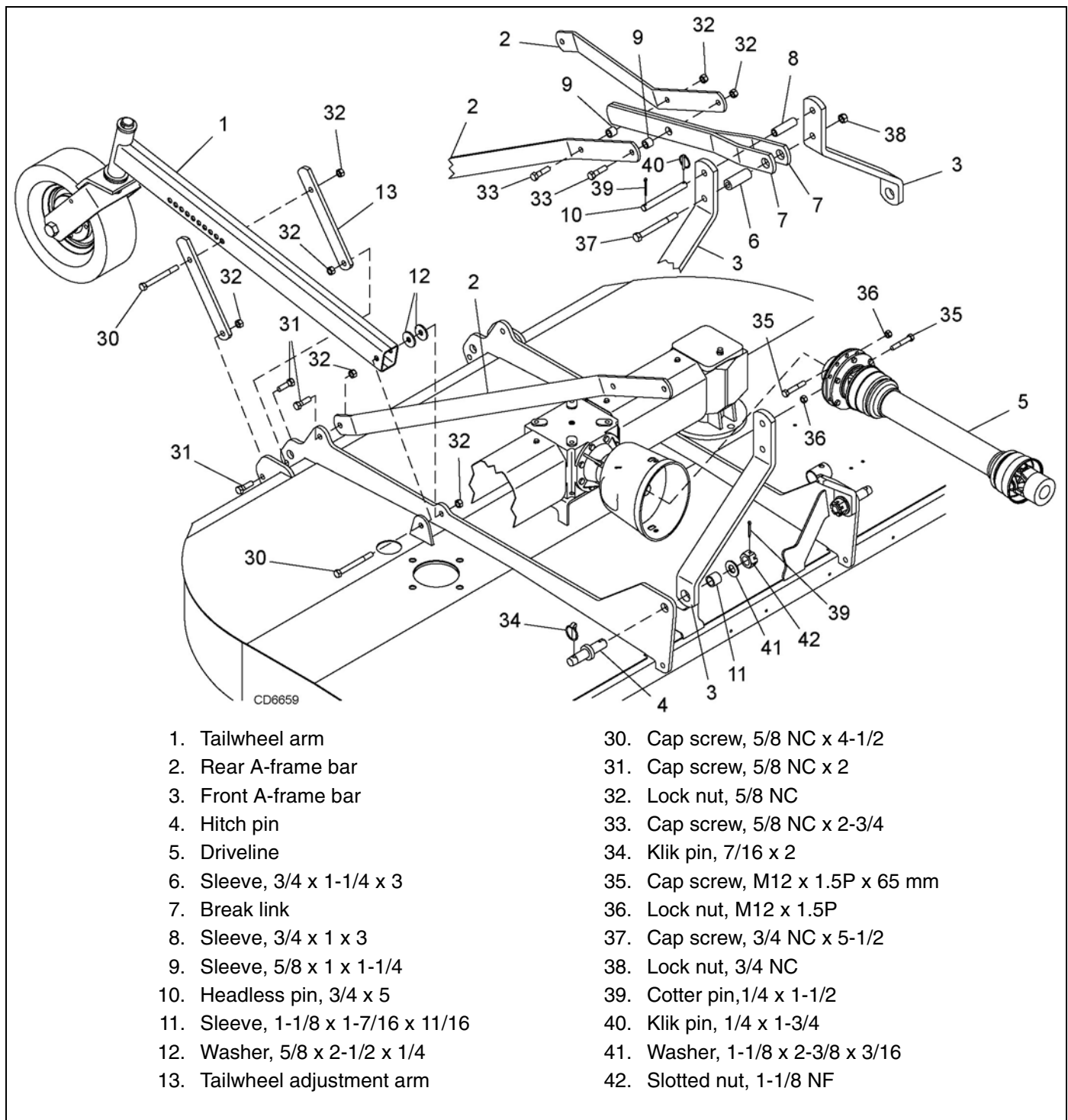


Figure 39. DS96 Mounted Assembly

ASSEMBLE - DS120 MOUNTED CUTTER

Refer to Figure 42.

Place jackstands under cutter to raise it off the ground to provide clearance when assembling cutter. See "BLOCKING METHOD" on page 21 for jackstand placement.

Install A-Frame

1. Attach front A-frame bars (3) to the lower (square) hole of the cutter mast plates. Secure using carriage bolts (35), bushing sleeves (19), washers (34), and lock nuts (31).
2. Attach, rear A-frame bars (2) with washers (44) over mounting bolts (33) and secure with lock nuts (32).
3. Attach the two rear A-frame bars (2) together at the top rear hole using cap screw (43), spacer sleeve (9), and lock nut (31).
4. Place both break links (7) together and position between front hole of rear A-frame bars. Secure rear A-frame bars and break links together using cap screw (43), spacer sleeve (9), and lock nut (31). **NOTE:** Break links must rest on top of rear spacer sleeve (9).
5. Place spacer sleeve (6) through front holes of break links. Align break links with bottom holes on front A-frame bars (3) and secure together using cap screw (39) and lock nut (40).

Category 2 Standard Hitch (Figure 40)

Install top link pin (10) and sleeve (6) into top holes of A-frame. Secure with cotter pin (41) and klik pin (42).

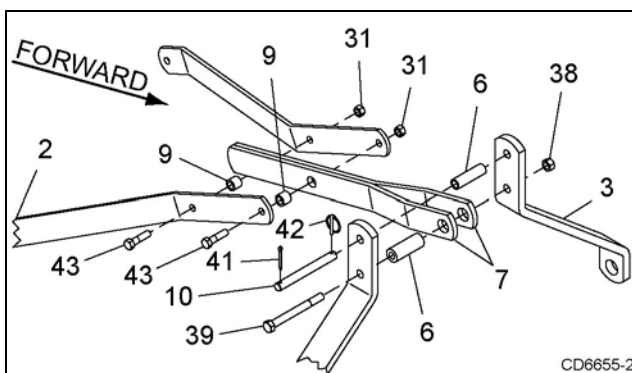


Figure 40. Category 2 Hitch Arrangement

Category 3 Standard Hitch

Install top link pin (10) and sleeve (8) into top holes of A-frame. Secure with cotter pin (41) and klik pin (42).

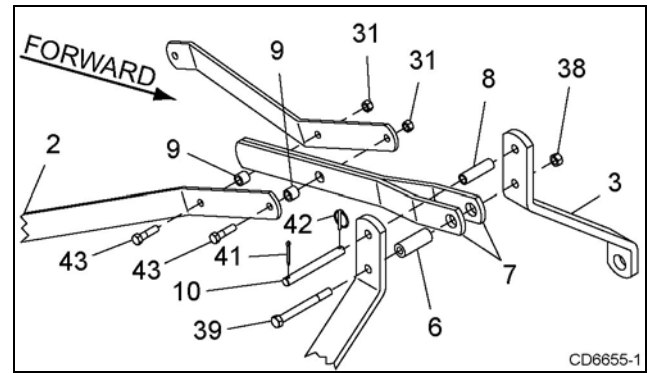


Figure 41. Category 3 Hitch Arrangement

Install Tailwheel Arms

Attach tailwheel arms (1) to the tailwheel using eight (four per arm) cap screws (30) and lock nuts (31).

NOTE: Position tailwheel arms on tailwheel to desired location (usually on row crop centers).

Install Height Adjustment Device

Ratchet

Install ratchet (18) between cylinder lugs on tailwheel and lugs on the deck. Secure to lugs on the deck with pin (11) and two cotter pins (41). Secure to tailwheel with pin (12) and two cotter pins (41).

Cylinder

1. Place hydraulic cylinder (14) between lugs on tailwheel and lugs on deck.
2. Secure to deck lugs using pin (11) and two cotter pins (41).
3. Extend cylinder rod, place transport lock bracket (13) over cylinder rod end and between lugs on tailwheel.
4. Align holes of cylinder rod, transport lock bracket and lugs on tailwheel. Secure assembly using pin (12) and two cotter pins (41).

Install Hydraulic Hoses

WARNING

■ On mounted units with optional hydraulic cutting height adjustment, use a double-acting cylinder with a maximum extended length of 28-1/4" (718 mm) from attaching point center to center.

■ If using a cylinder other than the one supplied by Woods, make sure a breather fitting is installed in the cylinder rod end port. Use a restrictor fitting in the base end port to dampen the cutter lowering action.

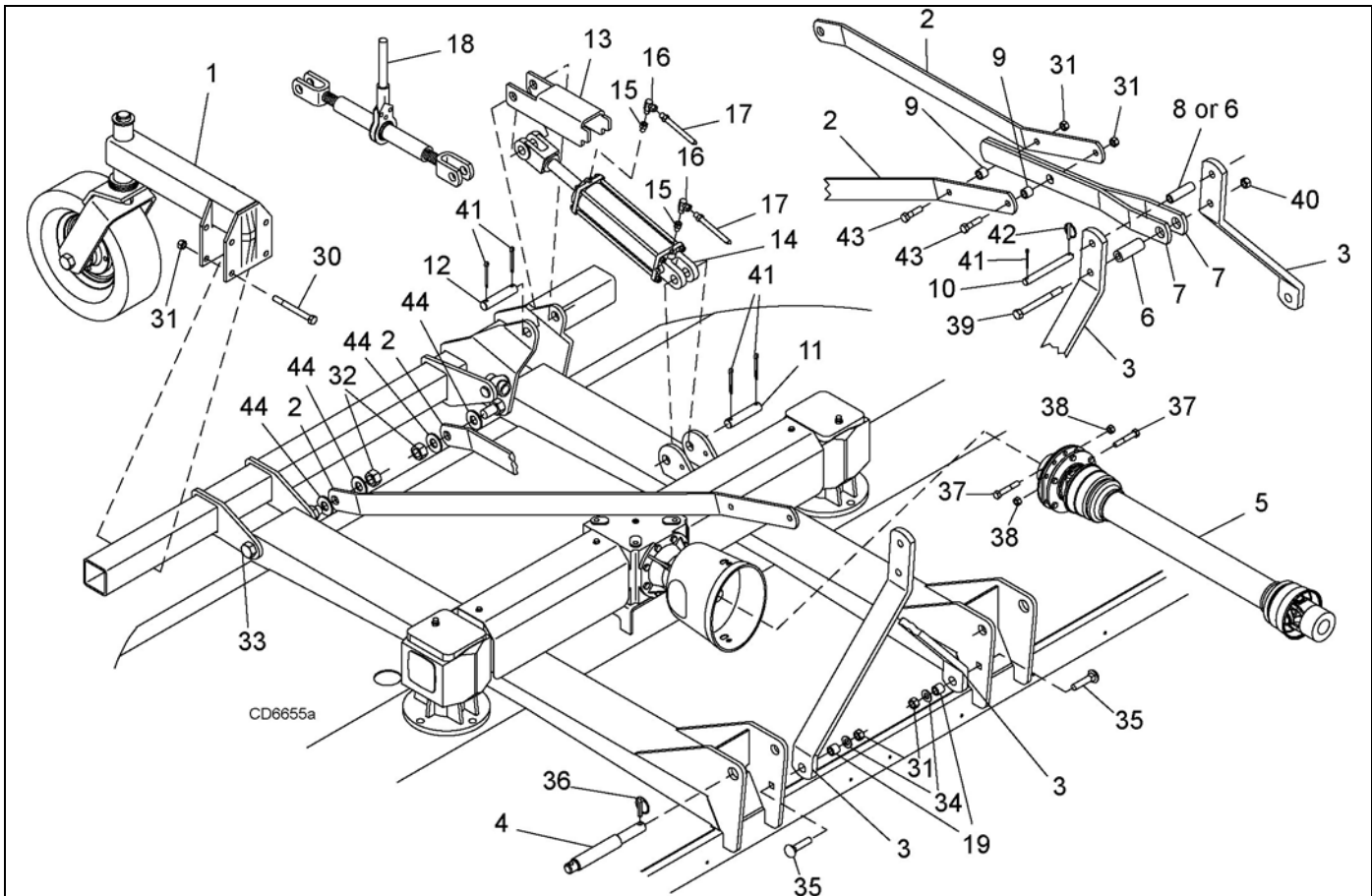
1. Install a reducer bushing (15) and a restricter swivel elbow (16) in port at base end and rod end of cylinder (14). Position elbows to point toward front of cutter.

NOTE: Mounted units must use a double acting cylinder to prevent damage to tailwheels during transport.

2. Connect hoses (17) to elbows (16).

Install Driveline

1. Coat input shaft of gearbox with a light coating of grease.
2. Attach slip clutch on driveline (5) to input shaft of gearbox. Tighten cap screws (37) and lock nut (38).
3. Attach rear tether chain of driveline to driveline shield.



- | | | |
|-----------------------------|-----------------------------------|-----------------------------------|
| 1. Tailwheel arm | 14. Hydraulic cylinder, 3 x 8 | 37. Cap screw, M12 x 1.5P x 65 mm |
| 2. Rear A-frame bar | 15. Reducer | 38. Lock nut, M12 x 1.5P |
| 3. Front A-frame bar | 16. Elbow, restricter | 39. Cap screw, 3/4 NC x 5-1/2 |
| 4. Lower hitch pin | 17. Hose, 156" | 40. Lock nut, 3/4 NC |
| 5. Driveline | 18. Ratchet | 41. Cotter pin, 1/4 x 1-1/2 |
| 6. Sleeve, 3/4 x 1-1/4 x 3 | 19. Sleeve, 5/8 x 1 x 13/16 | 42. Klik pin, 1/4 x 1-3/4 |
| 7. Break link | 30. Cap screw, 5/8 NC x 5 | 43. Cap screw, 5/8 NC x 2-3/4 |
| 8. Sleeve, 3/4 x 1 x 3 | 31. Lock nut, 5/8 NC | 44. Flat washer, 1" |
| 9. Sleeve, 5/8 x 1 x 1-1/4 | 32. Lock nut, 1" NC | |
| 10. Headless pin, 3/4 x 5 | 33. Cap screw, 1" NC x 12 | |
| 11. Headless pin, 1 x 4-1/2 | 34. Flat washer, 5/8 | |
| 12. Headless pin, 1 x 5 | 35. Carriage bolt, 5/8 NC x 2-1/2 | |
| 13. Transport lock-up | 36. Klik pin, 7/16 x 2 | |

Figure 42. DS120 Mounted Assembly

FILL GEARBOXES

NOTICE

■ Gearbox is not filled at the factory. Prior to delivery to customer, make sure gearbox is filled only half-full with 80W or 90W API GL-4 or GL-5 gear lube. Use side plug to remove any excess oil.

1. Make sure vent plug hole is clear (installed by dealer).
2. Remove plug on side of gearbox.
3. Fill gearbox until oil runs out the side plug on gearbox. Use a high quality gear oil with a viscosity index of 80W or 90W and an API service rating of GL-4 or GL-5.
4. Install side plug and vent plug.

INSTALL RUBBER SHIELDING

1. Attach rubber belting (3) and deflector brackets (1) to the front of the frame using self-tapping screws (6), flat washers (8), and lock washers (7).

2. Attach front reflector bracket (9) over left front shield.
3. Attach rubber deflector (4) and center deflector strap (2) to the rear of the cutter frame using self-tapping screws (6), flat washers (8), and lock washers (7).

⚠ DANGER

■ Full chain or rubber shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain or rubber shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

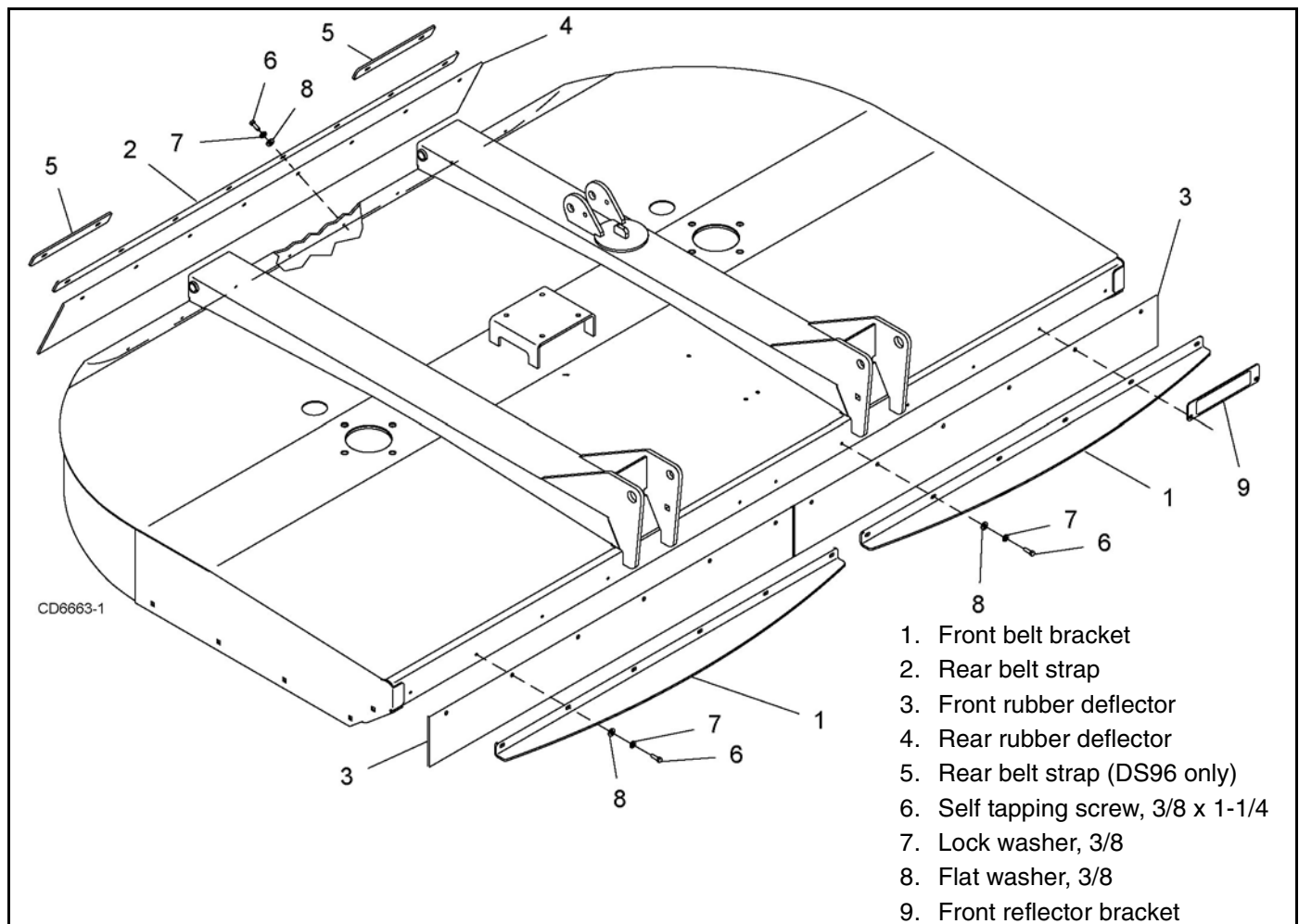


Figure 43. Rubber Shield Installation

INSTALL CHAIN SHIELDING (OPTIONAL)

The optional chain shielding assemblies are ready for installation when you receive them.

1. Install front and rear chain shielding as shown using self-tapping screws (6), lock washers (7), and flat washers (8).
2. Attach front reflector bracket (9) over left front shield.

⚠ DANGER

■ Full chain or rubber shielding must be installed when operating in populated areas or other areas where thrown objects could injure people or damage property.

- If this machine is not equipped with full chain or rubber shielding, operation must be stopped when anyone comes within 300 feet (92 m).
- This shielding is designed to reduce the risk of thrown objects. The mower deck and protective devices cannot prevent all objects from escaping the blade enclosure in every mowing condition. It is possible for objects to ricochet and escape, traveling as much as 300 feet (92 m).

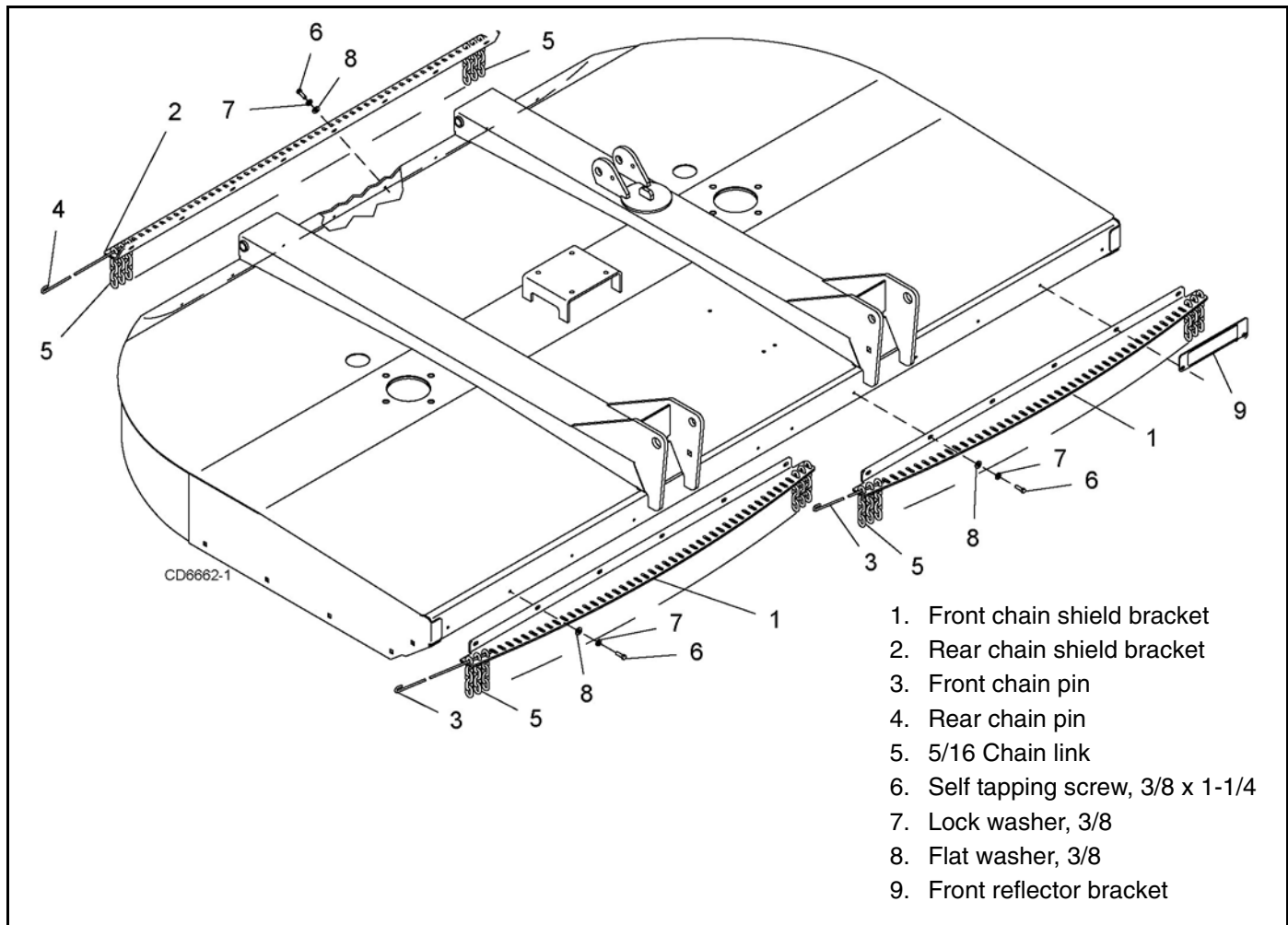


Figure 44. Optional Chain Shielding Installation

DEALER CHECK LISTS

PRE-DELIVERY CHECK LIST (DEALER'S RESPONSIBILITY)

Inspect cutter thoroughly after assembly to make sure it is set up properly before delivering it to the customer. The following check list is a reminder of points to inspect. Check off each item as it is found satisfactory, corrections are made, or services are performed.

NOTICE

■ **Gearbox was not filled at the factory. It must be serviced before operating cutter. (See LUBRICATION, page 21). Failure to service will result in damage to gearbox.**

- ___ Check that gearbox is properly serviced and seals are not leaking.
- ___ Check and grease all lubrication points as identified in Owner Service, LUBRICATION, page 21.
- ___ Check that blades have been properly installed.
- ___ Check all bolts to be sure they are properly torqued.
- ___ Check that all cotter pins are properly installed and secured.
- ___ Check that PTO shaft is properly installed.

DELIVERY CHECK LIST (DEALER'S RESPONSIBILITY)

- ___ Show customer how to make adjustments. Describe the options available for this cutter and explain their purpose.
- ___ Explain importance of lubrication to customer and point out lubrication points on cutter.
- ___ Point out all guards and shielding. Explain their importance and the safety hazards that exist when not kept in place and in good condition.
- ___ For mounted units, add wheel weights, ballast in front tires, and/or front tractor weight to enhance front end stability. A minimum 20% of tractor and equipment gross weight must be on front tractor wheels. When adding weight to attain 20% of tractor and equipment weight on front tractor wheels, you must not exceed the ROPS weight certification. Weigh the tractor and equipment. Do not estimate!
- ___ Present Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.
- ___ Explain to customer that when equipment is transported on a road or highway, safety devices should be used to give adequate warning to operators of other vehicles.



NOTES

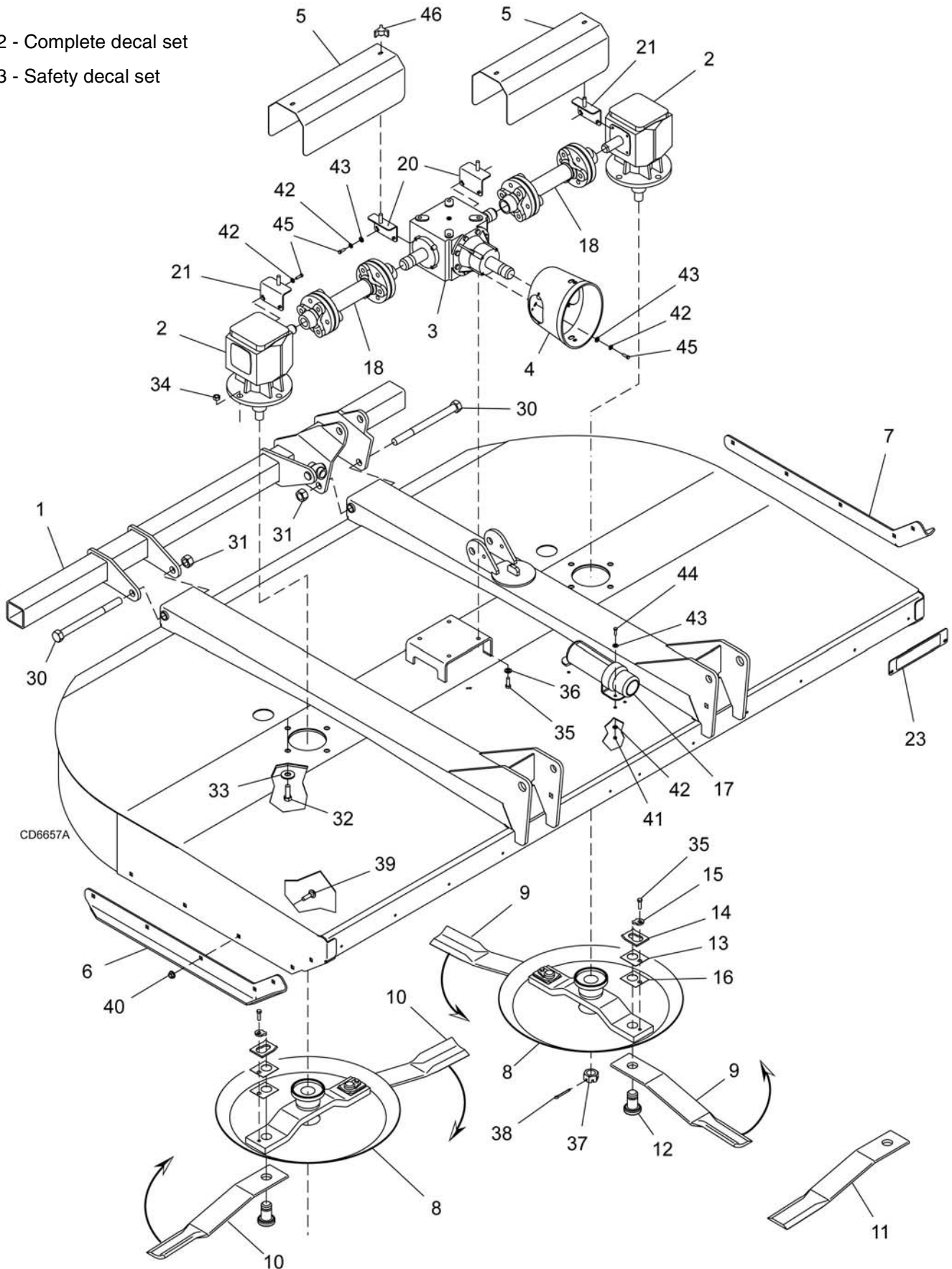
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DS96 / DS120 MAIN FRAME ASSEMBLY

22 - Complete decal set

23 - Safety decal set



52 Parts

(Rev. 2/6/2009)
MAN0390 (Rev. 4/6/2007)

DS96 / DS120 MAIN FRAME PARTS LIST

DS96

DS120

REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
				1	1009230	1	Tailwheel weldment
2	1008191	2	Spindle gearbox (see page 62)	2	58803	2	Spindle gearbox (see page 62)
3	1008192	1	Splitter gearbox (see page 61)	3	1008192	1	Splitter gearbox (see page 61)
4	1002048	1	Clutch shield	4	1002048	1	Clutch shield
5	1013377	2	Shield	5	1009202	2	Shield
6	1013378	1	Right skid	6	1009178	1	Right skid
7	1013379	1	Left skid	7	1009179	1	Left skid
8	1013370	2	Crossbar	8	1009180	2	Crossbar
9	11769KT	1	Right blade CCW (kit includes 2 blades)	9	19160KT	1	Right blade CCW (kit includes 2 blades)
10	11768KT	1	Left blade CW (kit includes 2 blades)	10	19161KT	1	Left blade CW (kit includes 2 blades)
11	11886KT	2	Double edge blade (kit includes 2 blades)	11	19162KT	2	Double edge blade (kit includes 2 blades)
12	1009098	4	Blade pin kit (includes item 14 & 15)	12	1008190	4	Blade pin kit (includes item 14 & 15)
13	13946	4	20 ga Shim (as required)	13	13946	4	20 ga Shim (as required)
14	32603	4	Keyhole plate	14	32603	4	Keyhole plate
15	32604	4	Blade pin lock clip	15	32604	4	Blade pin lock clip
16	10520	4	18 ga Shim (as required)	16	10520	4	18 ga Shim (as required)
17	1003828	1	Manual tube	17	1003828	1	Manual tube
18	1019437	2	Flexible drive coupler (see page 63)	18	1009207	2	Flexible drive coupler (see page 63)
20	1009203	2	Shield hold down, inside	20	1009203	2	Shield hold down, inside
21	1009204	2	Shield hold down, outside	21	1009204	2	Shield hold down, outside
22	1008194	1	Complete decal set	22	1008194	1	Complete decal set
23	1008195	1	Safety decal set	23	1008195	1	Safety decal set

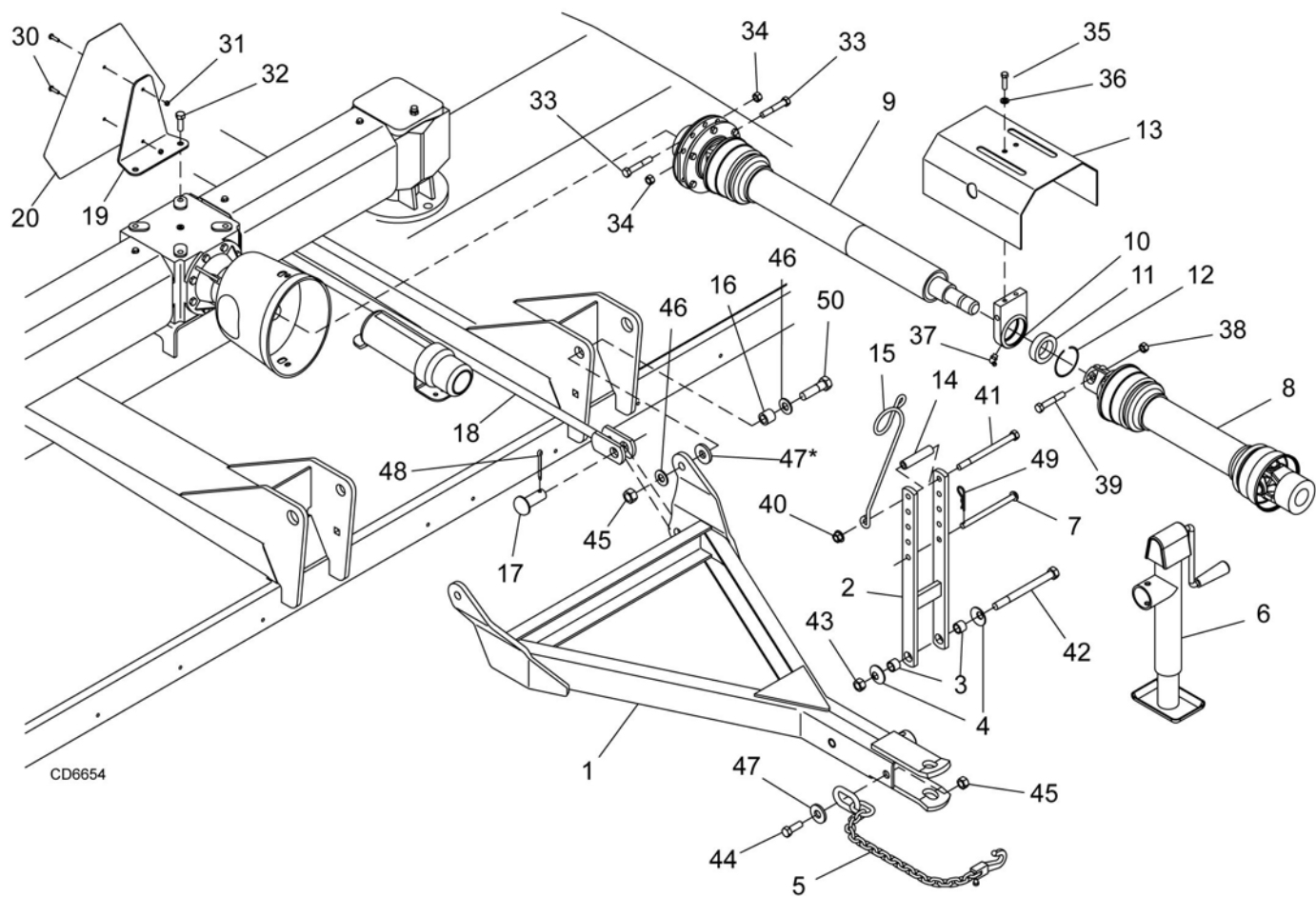
Hardware

Hardware

REF	PART	DESCRIPTION	REF	PART	DESCRIPTION
30	39141	1" NC x 12 Cap screw GR5	40	14406 *	1/2 NC x 1 Carriage bolt
31	34279	1" NC Lock nut	41	4529 *	5/16 NC Hex nut
32	30068 *	3/4 NC x 2-1/2 Hex head cap screw GR5	42	2472 *	5/16 Lock washer
33	57798	3/4 Hardened flat washer	43	35155 *	5/16 Flat washer
34	302207 *	3/4 NC Flange lock nut	44	6250 *	5/16 NC x 1-1/4 Hex head cap screw GR5
35	6100 *	1/2 NC x 1-1/4 Hex head cap screw GR5	45	24801	M8 x 1.25P x 20 mm Hex head cap screw GR5
36	855 *	1/2 Lock washer	46	66840	Knob, 3-Prong 3/8 NC
37	39323	M30 x 2 Castle nut			
38	----- *	B6 x 60 Cotter pin			
39	11900 *	1/2 NC Flange lock nut			

* Standard hardware, obtain locally

DS96 / DS120 PULL-TYPE ASSEMBLY, FRONT HALF



CD6654

54 Parts

(Rev. 7/4/2008)
MAN0390 (Rev. 4/6/2007)

DS96 / DS120 PULL-TYPE ASSEMBLY, FRONT HALF PARTS LIST

DS96

REF	PART	QTY	DESCRIPTION
1	1009220	1	Tongue
2	11940	1	H-frame
3	1791	2	Sleeve, 5/8 x 1 x 9/16
4	10635	2	Cup washer 5/8 x 1-3/4 x 14 Ga
5	19407	1	Safety chain
6	23790	1	Parking jack
7	404	1	Clevis pin, 1/2 x 5-3/4
8	40599	1	Front 2/3 drive (see page 66)
9	1009206	1	Rear 1/3 drive (see page 64)
10	13132	1	3-joint drive bearing housing (includes items 11,12, 37)
11	13133	1	Bearing
12	12128	1	Snap ring
13	1011760	1	Shield
14	27267	1	Sleeve, 1/2 x 3.56
15	3443	1	Hose holder
16	10083	2	Sleeve 3/4 x 1-1/8 x 5/8
17	46605	1	Clevis pin 1.00 x 2.26
18	1013388	1	Attitude rod
19	1009234	1	SMV Bracket
20	24611	1	Slow moving vehicle emblem

DS120

REF	PART	QTY	DESCRIPTION
1	1009220	1	Tongue
2	11939	1	H-frame
3	1791	2	Sleeve, 5/8 x 1 x 9/16
4	10635	2	Cup washer 5/8 x 1-3/4 x 14 Ga
5	19407	1	Safety chain
6	23790	1	Parking jack
7	404	1	Clevis pin, 1/2 x 5-3/4
8	40599	1	Front 2/3 drive (see page 66)
9	1009206	1	Rear 1/3 drive (see page 64)
10	13132	1	3-joint drive bearing housing (includes items 11,12,37)
11	13133	1	Bearing
12	12128	1	Snap ring
13	1011760	1	Shield
14	27267	1	Sleeve, 1/2 x 3.56
15	3443	1	Hose holder
16	10083	2	Sleeve 3/4 x 1-1/8 x 5/8
17	46605	1	Clevis pin 1.00 x 2.26
18	39385	1	Attitude rod
19	1009234	1	SMV Bracket
20	24611	1	Slow moving vehicle emblem

Hardware

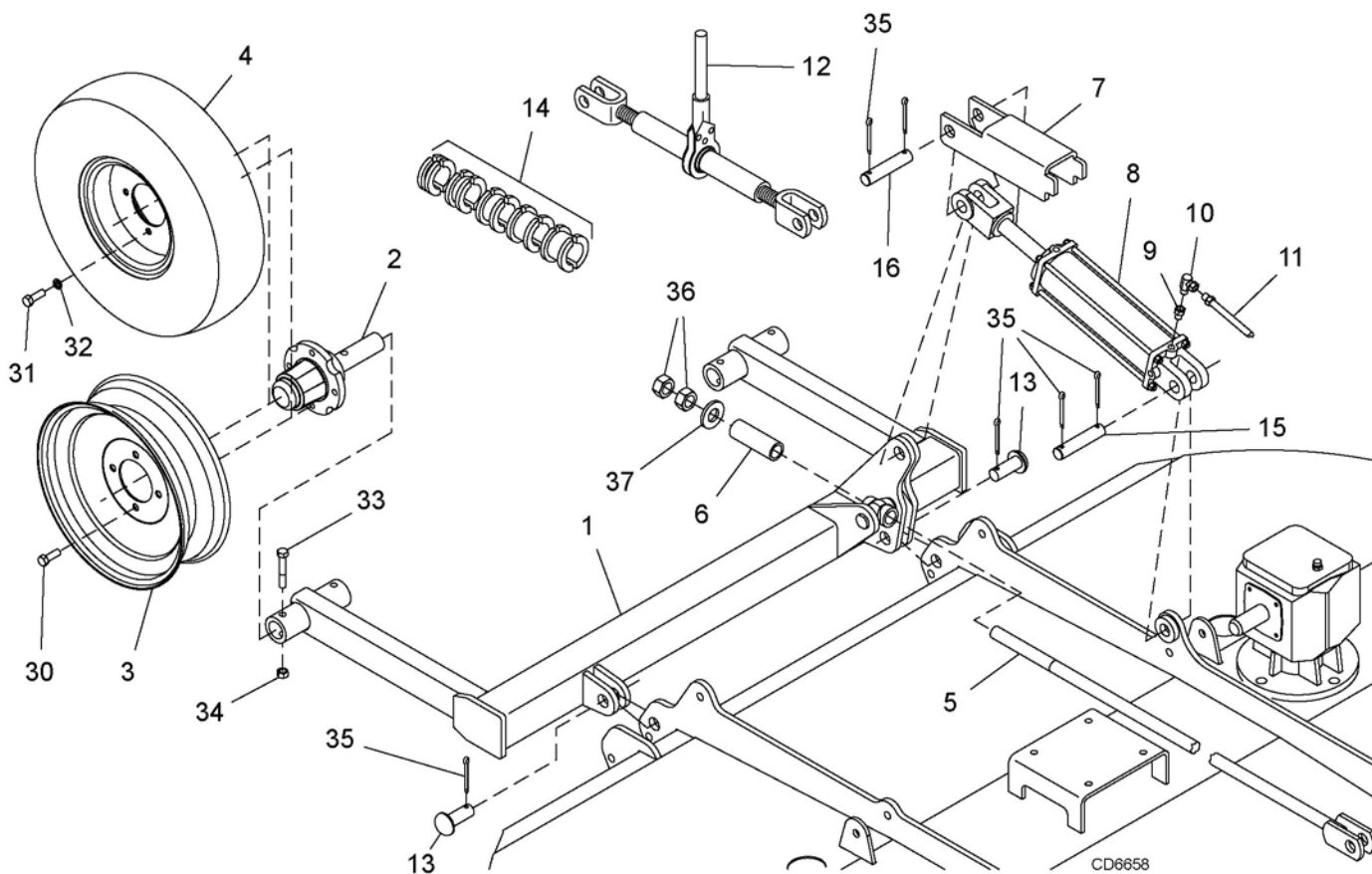
REF	PART	DESCRIPTION
30	1282 *	1/4 NC x 1/2 Round head cap screw
31	5288 *	1/4 NC Nut
32	25475 *	1/2 NC x 1 Hex head cap screw GR5
33	57262	M12 x 1.5 x 65 mm Hex head screw
34	57261	M12 x 1.5 Hex lock nut
35	839 *	3/8 NC x 1 Hex head cap screw GR5
36	838 *	3/8 Standard lock washer
37	2985 *	1/4-28 x 90 Grease fitting
38	765 *	1/2 NC Lock nut
39	19811 *	1/2 NC x 2 Hex head cap screw GR8

Hardware

REF	PART	DESCRIPTION
41	12305	1/2 NC x 5-1/2 Hex head cap screw GR5
42	12005	5/8 NC x 6 Hex head cap screw GR5
43	6239	5/8 NC Lock nut
44	14334 *	3/4 NC x 3 Hex head cap screw GR5
45	2371 *	3/4 NC Lock nut
46	1257 *	3/4 Standard flat washer
47	8424	Washer 3/4 x 2 x 3/8
48	1285 *	1/4 x 1-1/2 Cotter pin
49	1256 *	3/16 x 1 Cotter pin
50	14334	3/4 NC x 3 HHCS GR5

* Standard hardware, obtain locally

DS96 PULL-TYPE ASSEMBLY, REAR HALF

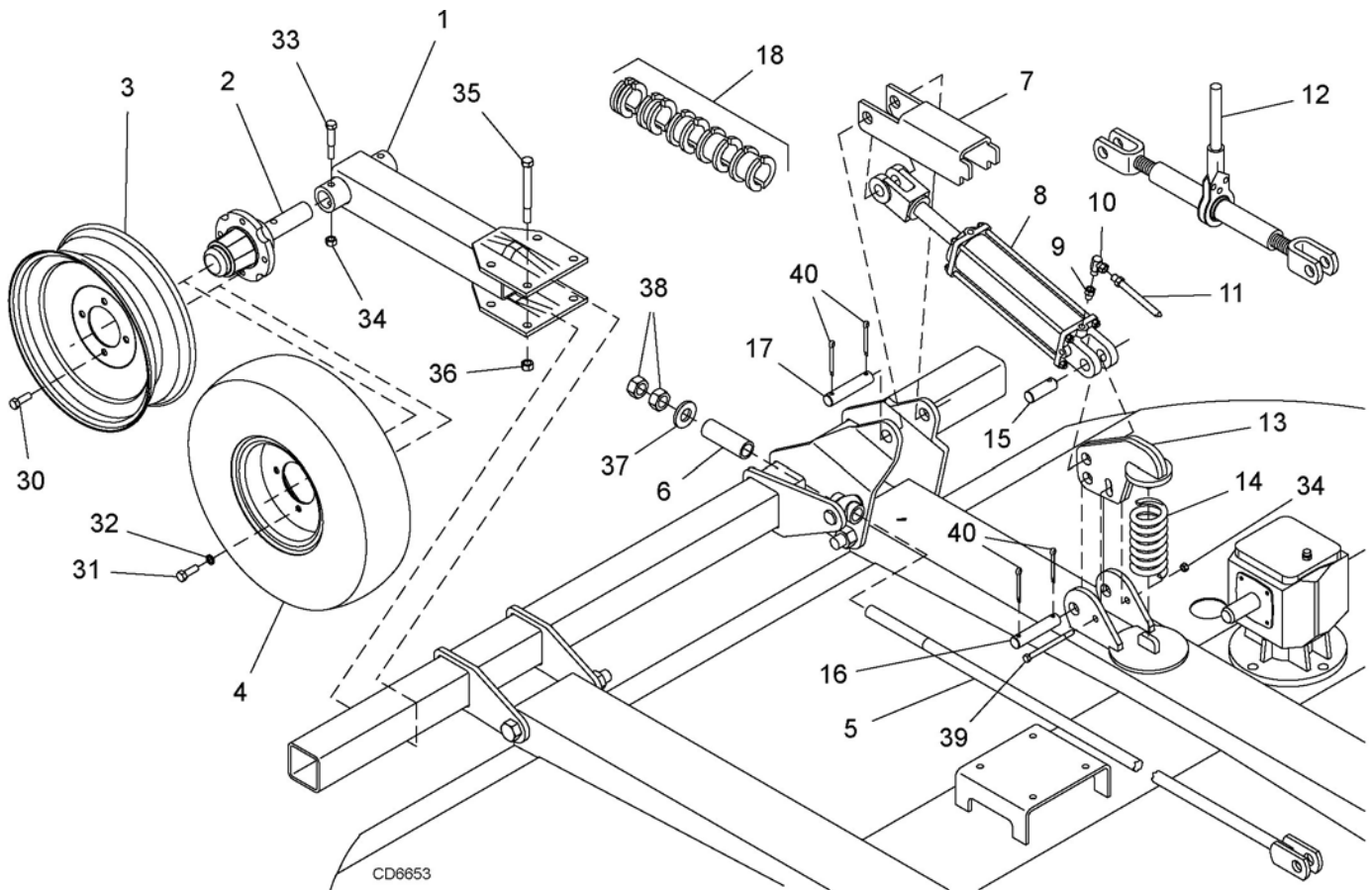


REF	PART	QTY	DESCRIPTION	REF	PART	DESCRIPTION
1	1013380	1	Tailwheel weldment	30	1258 *	1/2 NF x 1-1/8 Wheel bolt
2	1003492	2 or 4	Wheel hub (see page 67)	31	4119 *	1/2 NF x 1 Hex head cap screw GR5
3	529	2	15" steel rim - or-	32	855 *	1/2 Standard lock washer
4	7428	2	21" solid tire - or-	33	3489 *	1/2 NC x 3 Hex head cap screw GR5
4	1003695	2	22" Used aircraft tire - or-	34	11900 *	1/2 NC Flange lock nut
4	1003695F	2	22" Used aircraft tire foam filled - or-	35	1285 *	1/4 x 1-1/2 Cotter pin
4	1003410	2	29" Used aircraft tire	36	3132 *	1" NC Hex nut
5	1013388	1	Attitude rod	37	1863 *	1" Standard flat washer
6	27267	1	1" Schedule 40 pipe x 3.75			
7	1004814	1	Transport lock-up			* Standard hardware, obtain locally
8	29547	1	3 x 8 Hydraulic cylinder (see page 70)			
9	11893	1	1/2 to 1/4 Reducer			
10	10290	1	1/4 x 1/4 90° Elbow w / 1/16 restricter			
11	8669	1	1/4 x 156" Hose			
12	1005020	1	Ratchet adjustment link			
13	46605	2	Clevis pin 1.00 x 2.26			
14	24098	1	1-1/4 Stroke control kit (see page 71)			

56 Parts

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DS120 PULL-TYPE ASSEMBLY, REAR HALF



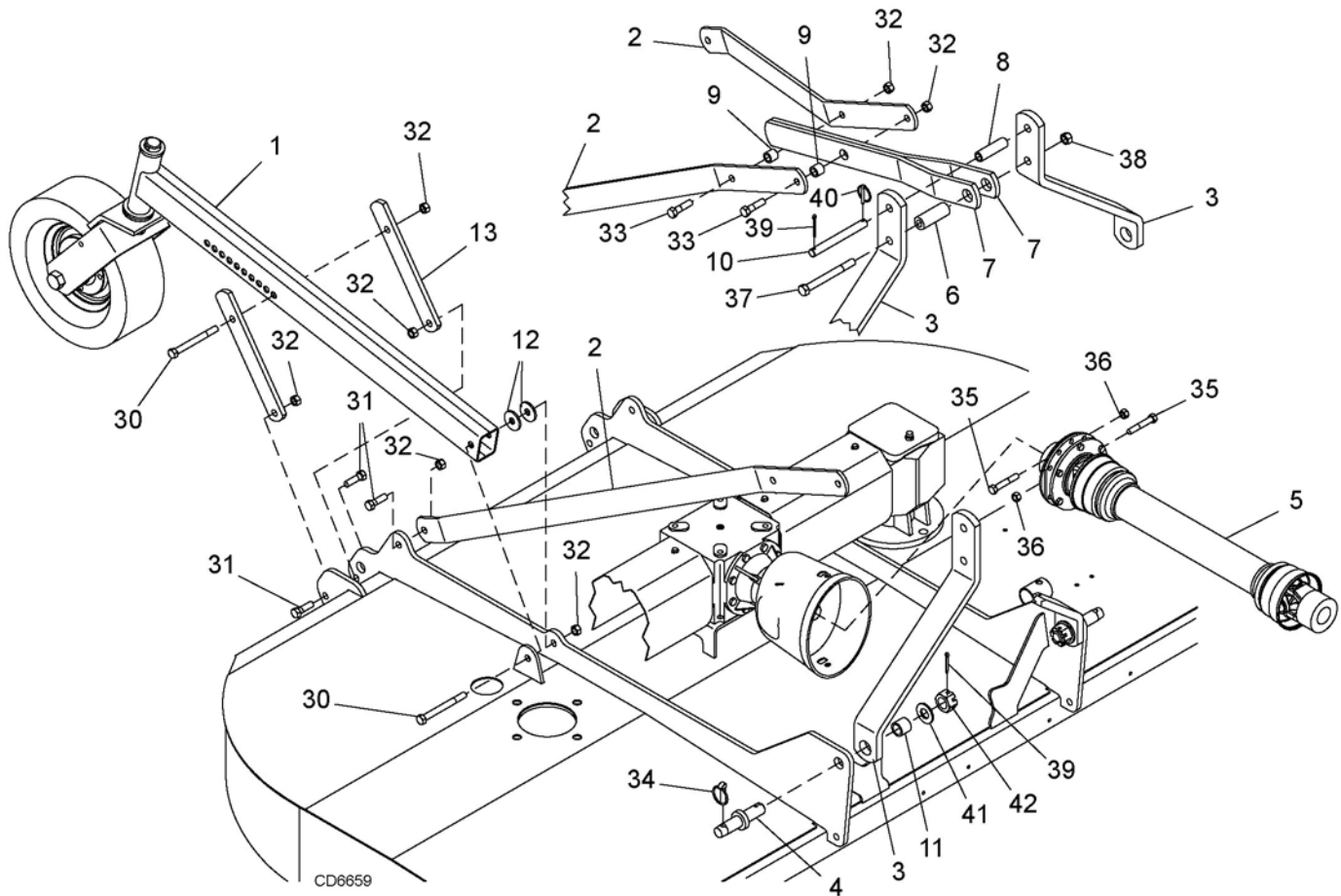
REF	PART	QTY	DESCRIPTION
1	1009165	2	Tailwheel arm
2	1003492	2 or 4	Wheel hub (see page 67)
3	529	2	15" steel rim - or-
4	7428	2	21" solid tire - or-
4	1003695	2	22" Used aircraft tire - or-
4	1003695F	2	22" Used aircraft tire foam filled - or-
4	1003410	2	29" Used aircraft tire
5	39385	1	Attitude rod
6	27267	1	1" Schedule 40 pipe x 3.75
7	1004814	1	Transport lock-up
8	29547	1	3 x 8 Hydraulic cylinder (see page 70)
9	11893	1	1/2 to 1/4 Reducer
10	10290	1	1/4 x 1/4 90° Elbow w / 1/16 restrictor
11	8669	1	1/4 x 156" Hose
12	1005020	1	Ratchet adjustment link
13	1009245	1	Spring arm

REF	PART	QTY	DESCRIPTION
14	13316	1	Spring
15	11493	1	1 x 3 Headless pin
16	8346	1	1 x 4-1/2 Headless pin
17	8347	1	1 x 5 Headless pin
18	24098	1	1-1/4 Stroke control kit (see page 71)

REF	PART	DESCRIPTION
30	1258 *	1/2 NF x 1-1/8 Wheel bolt
31	4119 *	1/2 NF x 1 Hex head cap screw GR5
32	855 *	1/2 Standard lock washer
33	3489 *	1/2 NC x 3 Hex head cap screw GR5
34	11900 *	1/2 NC Flange lock nut
35	378 *	5/8 NC x 5 Hex head cap screw GR5
36	6239 *	5/8 NC Lock nut
37	1863 *	1" Standard flat washer
38	3132 *	1" NC Hex nut
39	23479 *	1/2 NC x 5 Hex head cap screw GR5
40	1285 *	1/4 x 1-1/2 Cotter pin

* Standard hardware, obtain locally

DS96 MOUNTED ASSEMBLY



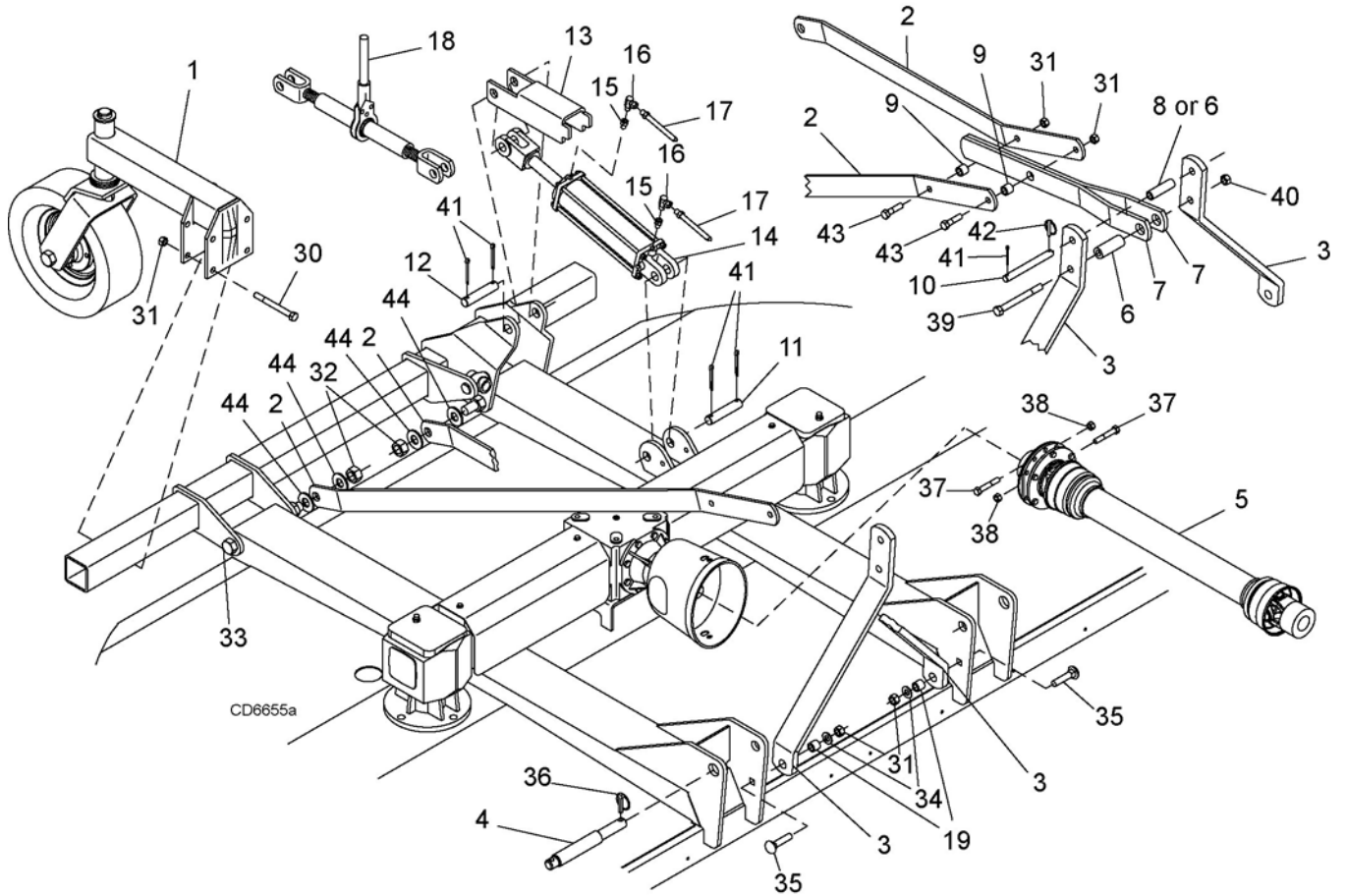
REF	PART	QTY	DESCRIPTION	REF	PART	DESCRIPTION
1	-----	2	Tailwheel arm (see page 60)	30	3097 *	5/8 NC x 4-1/2 Hex head cap screw GR5
2	1013376	2	Rear A-frame link	31	902	5/8 NC x 2 Hex head cap screw GR5
3	1013397	2	Front A-frame link	32	6239 *	5/8 NC Lock nut
4	14012	2	Hitch pin	33	986 *	5/8 NC x 2-3/4 Hex head cap screw GR5
5	1005790	1	Drive (see page 65)	34	35124 *	7/16 x 2 Klik pin
6	27140	1	Sleeve 3/4 x 1-1/4 x 3	35	57262	M12 x 1.5 x 65 mm Hex head screw
7	1013375	2	Break link	36	57261	M12 x 1.5 Hex lock nut
8	14824	1	Sleeve 3/4 x 1 x 3	37	29315 *	3/4 NC x 5-1/2 Hex head cap screw GR5
9	66661	2	Sleeve 5/8 x 1 x 1-1/4	38	2371 *	3/4 NC Lock nut
10	8327	1	3/4 x 5 Headless pin	39	1285 *	1/4 x 1-1/2 Cotter pin
11	28306	2	Sleeve 1-1/8 x 1-7/16 x 11/16	40	62043	1/4 x 1-3/4 Klik pin
12	30278	4	5/8 x 2-1/2 x 1/4 Washer	41	12272	1-1/8 x 2-3/8 x 3/16 Washer
13	1013374	4	Tailwheel adjustment arm	42	14153	1-1/8 NF Slotted hex nut

* Standard hardware, obtain locally

58 Parts

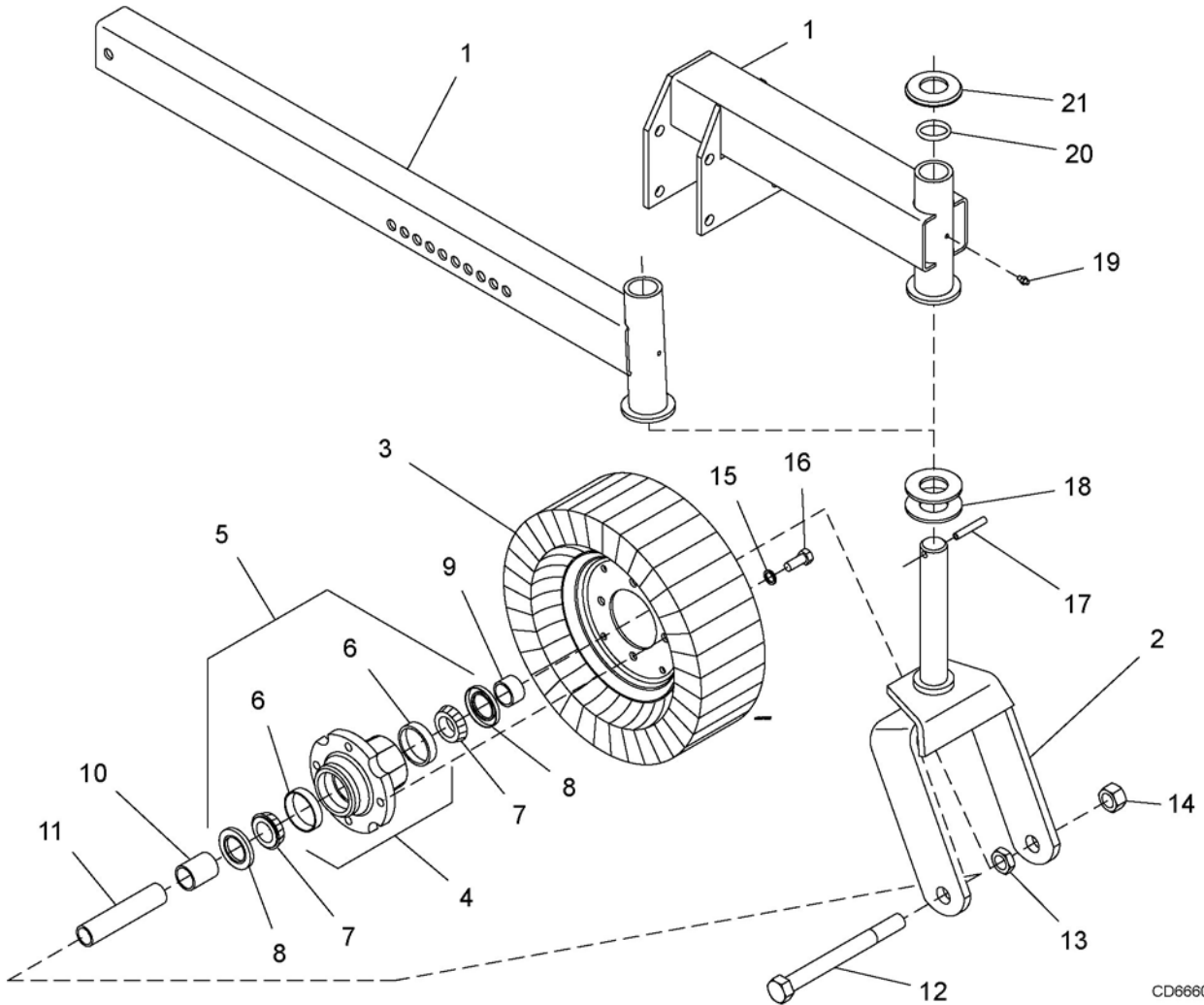
MAN0390 (Rev. 4/6/2007)

DS120 MOUNTED ASSEMBLY



REF	PART	QTY	DESCRIPTION	REF	PART	DESCRIPTION
1	-----	2	Tailwheel (see page 60)	30	378 *	5/8 NC x 5 Hex head cap screw GR5
2	1009214	2	Rear A-frame link	31	19025 *	5/8 NC Flange lock nut
3	1009212	2	Front A-frame link	32	34279	1" NC lock nut
4	39064	2	Lower hitch pin	33	39141	1" NC x 12 Hex head cap screw GR5
5	57413	1	Drive (see page 65)	34	692 *	5/8 Standard flat washer
6	27140	2	Sleeve 3/4 x 1-1/4 x 3	35	5836 *	5/8 NC x 2-1/2 Carriage bolt GR5
7	1013375	2	Break link	36	35124 *	7/16 x 2 Klik pin
8	14824	1	Sleeve 3/4 x 1 x 3	37	57262	M12 x 1.5 x 65 mm Hex head screw
9	66661	2	Sleeve 5/8 x 1 x 1-1/4	38	57261	M12 x 1.5 Hex lock nut
10	8327	1	3/4 x 5 Headless pin	39	29315 *	3/4 NC x 5-1/2 Hex head cap screw GR5
11	8346	1	1 x 4-1/2 Headless pin	40	2371 *	3/4 NC Lock nut
12	8347	1	1 x 5 Headless pin	41	1285 *	1/4 x 1-1/2 Cotter pin
13	1004814	1	Transport lock-up	42	62043	1/4 x 1-3/4 Klik pin
14	29547	1	3 x 8 Hyd cylinder (see page 70)	43	986 *	5/8 NC x 2-3/4 Hex head cap screw GR5
15	11893	1	1/2 to 1/4 Reducer	44	1863 *	1" Standard flat washer
16	10290	1	1/4 x 1/4 90° Elbow w/1/16 restricter			
17	8669	1	1/4 x 156" Hose			* Standard hardware, obtain locally
18	1005020	1	Ratchet adjustment link			
19	12313	2	Sleeve 5/8 x 1 x 13/16			

DS96 / DS120 MOUNTED TAILWHEEL ASSEMBLY



CD6660

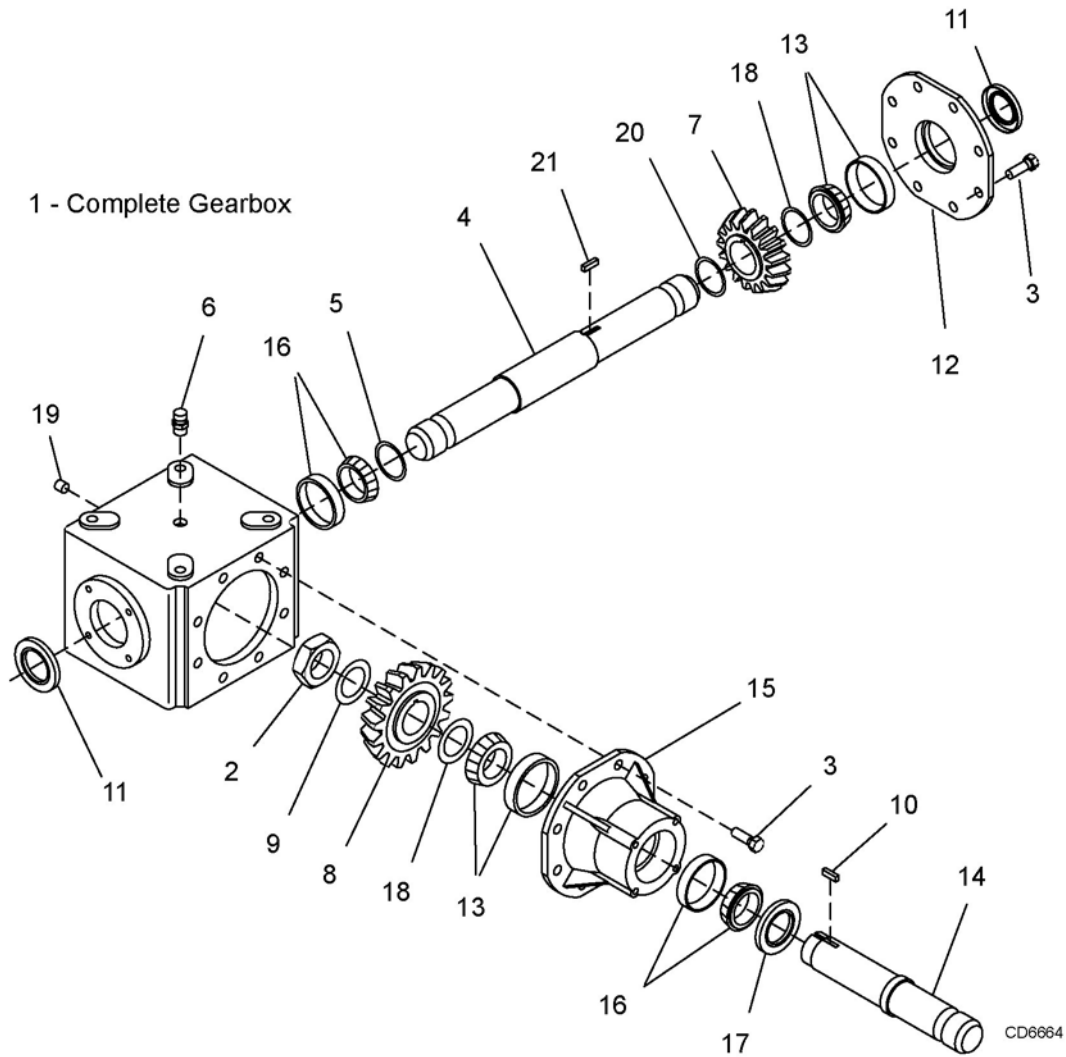
REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	1013385	2	Tail wheel arm (DS96 only)	12	15087	4	1" NC x 9 Hex head cap screw GR5
	or	or		13	1386	4	1" NC Jam nut
1	1009185	2	Tailwheel arm (DS120 only)	14	34279	4	1" NC Lock nut
2	15580	2	Tail wheel clevis	15	855 *	8	1/2 Standard lock washer
3	12577	2	4 x 8 Rim and laminated tire	16	4119 *	8	1/2 NF x 1 Hex head cap screw
4	15591	2	Wheel hub with cups (includes 2 of item 6)	17	4674	2	3/8 x 2 Spirol pin
5	15277	2	Wheel hub assembly (includes 2 of items 6, 7, 8)	18	2370	4	Washer 1.62 x 3 x .18
6	309	4	Bearing cup	19	12296 *	2	1/4-28 Straight grease fitting
7	310	4	Bearing cone	20	12889	2	3/32 x 1-9/16 O.D. O-ring
8	314	4	Seal for 1-1/2 shaft	21	12881	2	Cap washer
9	15574	2	Sleeve 1.25 x 1.50 x .903				
10	15575	2	Sleeve 1.25 x 1.50 x 1.86				
11	15573	2	Sleeve 1.00 x 1.25 x 5.81				

* Standard hardware, obtain locally

60 Parts

MAN0390 (Rev. 4/6/2007)

DS96 / DS120 SPLITTER GEARBOX ASSEMBLY

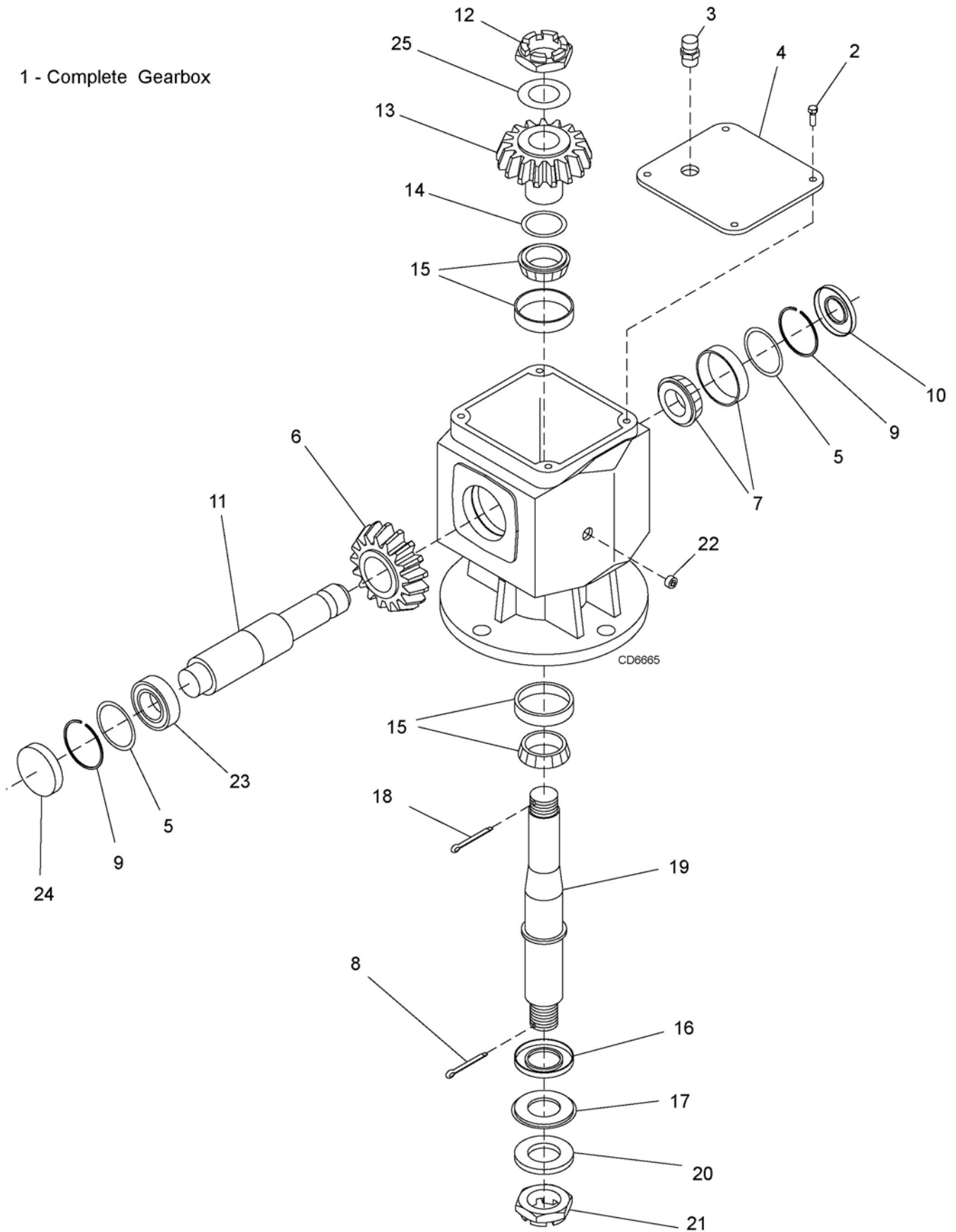


REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	1008192	--	Complete gearbox	12	1008136	1	Cover
2	1008130	1	Lock nut	13	1008148	2	Bearing cup and cone
3	39274 *	16	M10 x 1.5 x 22 mm Cap screw	14	1008149	1	Input shaft 1-3/4 20 spline
4	1008131	1	Through shaft 1-3/4 20 spline	15	1008151	1	Housing extension
5	57456	1	Shim 45.3 x 65.3 x 2.5	16	39408	2	Bearing cup and cone
6	39325	1	3/8 Vent plug	17	39412	1	Seal 52 x 85 x 10
7	1008132	1	Crown gear, 27 teeth	18	58751	3	Shim kit 45.3 x 65.3
8	1008133	1	Pinion gear, 18 teeth	19	27326 *	4	3/8 NPT Solid plug
9	1008134	1	Shim 45.3 x 65.3 x 1	20	1008154	1	Spacer 45.3 x 60.3 x 5
10	39402	1	Key, 14 x 9 x 40	21	1008155	1	Key, 14 x 9 x 35
11	1008135	2	Seal, 45 x 72 x 8				

* Standard hardware, obtain locally

DS96 / DS120 SPINDLE GEARBOX ASSEMBLY

1 - Complete Gearbox



62 Parts

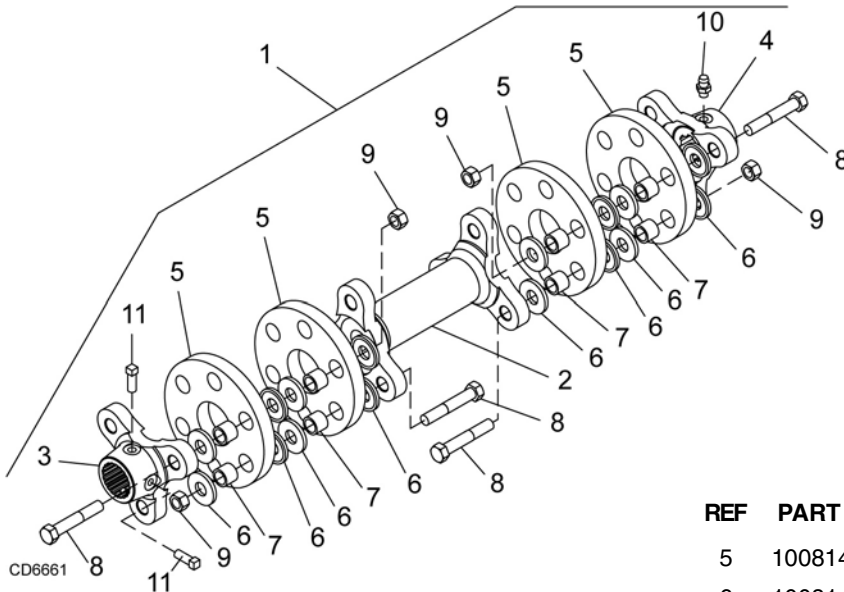
MAN0390 (Rev. 4/6/2007)

DS96 / DS120 SPINDLE GEARBOX ASSEMBLY PARTS LIST

REF	PART	QTY	DESCRIPTION
1	1008191	1	Complete gearbox (DS96 only)
1	58803	1	Complete gearbox (DS120 only)
2	57150 *	6	M8 x 1.25 x 14 mm Hex head cap screw
3	57076	1	1/2 Vent plug
4	57139	1	Cover
5	57328	1	Shim kit 60.3 x 71.7
6	1009096	1	Crown gear (DS96 only)
6	39424	1	Crown gear (DS120 only)
7	57462	1	Bearing cup and cone
8	----- *	1	Cotter pin B6 x 60 mm
9	57466	2	Snap ring
10	57463	1	Seal 35 x 72 x 10
11	57147	1	Input shaft 1-3/8 6 spline
12	39261	1	M30 x 1.5 Castle nut
13	1009097	1	Pinion gear (DS96 only)
14	39418	1	Pinion gear (DS120 only)
15	57471	1	Shim kit 50.3 x 70.3
16	39263	2	Bearing cup and cone
17	39289	1	Seal 50 x 90 x 10
18	57338	1	Screen protection
19	----- *	1	Cotter pin B4 x 55 mm
20	57191	1	Output shaft
21	39322	1	Flat washer 31 x 56 x 4
22	39323	1	M30 x 2.0 Castle nut
23	27326 *	1	3/8 NPT Solid plug
24	20890	1	Ball bearing
25	57374	1	Seal 72 x 10
26	57094	1	Shim 44 x 30.3 x 1

* Standard hardware, obtain locally

DS96 / DS120 FLEXIBLE COUPLER

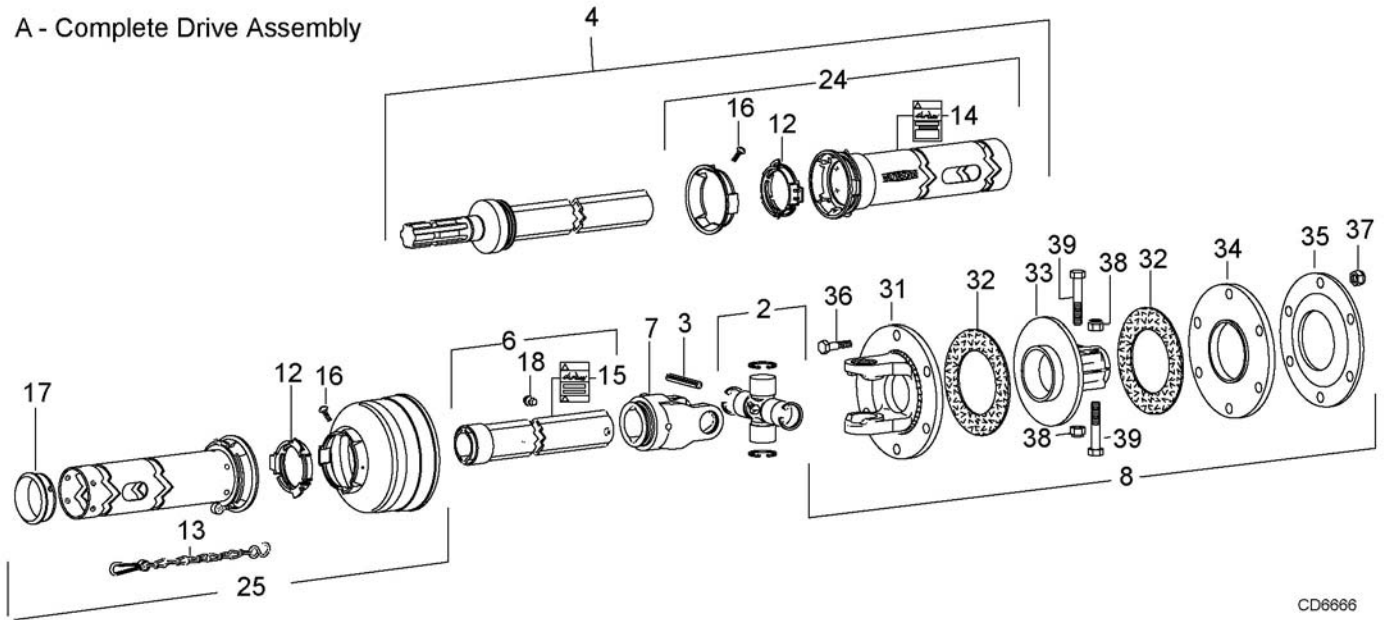


REF	PART	QTY	DESCRIPTION
1	1019437	1	Complete drive (DS96 only)
1	1009207	1	Complete drive (DS120 only)
2	-----	1	Inner connector yoke
3	1008147	1	Outer connector yoke 1-3/4 20-spline
4	1008143	1	Outer connector yoke 1-3/4 6-spline
5	1008140	4	Rubber disc
6	1008141	48	Shaped washer
7	1008142	24	Bushing, .63 I.D.
8	307430	12	M16 x 2.0 x 70 mm HHCS (only for 2 disc drives on DS96)
8	1001042	12	M16 x 2.0 x 90 mm HHCS
9	1008146	12	M16 x 2.0 Lock nut
10	----- *	1	Grease fitting
11	90016031 *	2	3/8 NC x 3/4 Square head set screw

* Standard hardware, obtain locally

DS96 / DS120 PULL-TYPE DRIVELINE, REAR 1/3

A - Complete Drive Assembly



CD8666

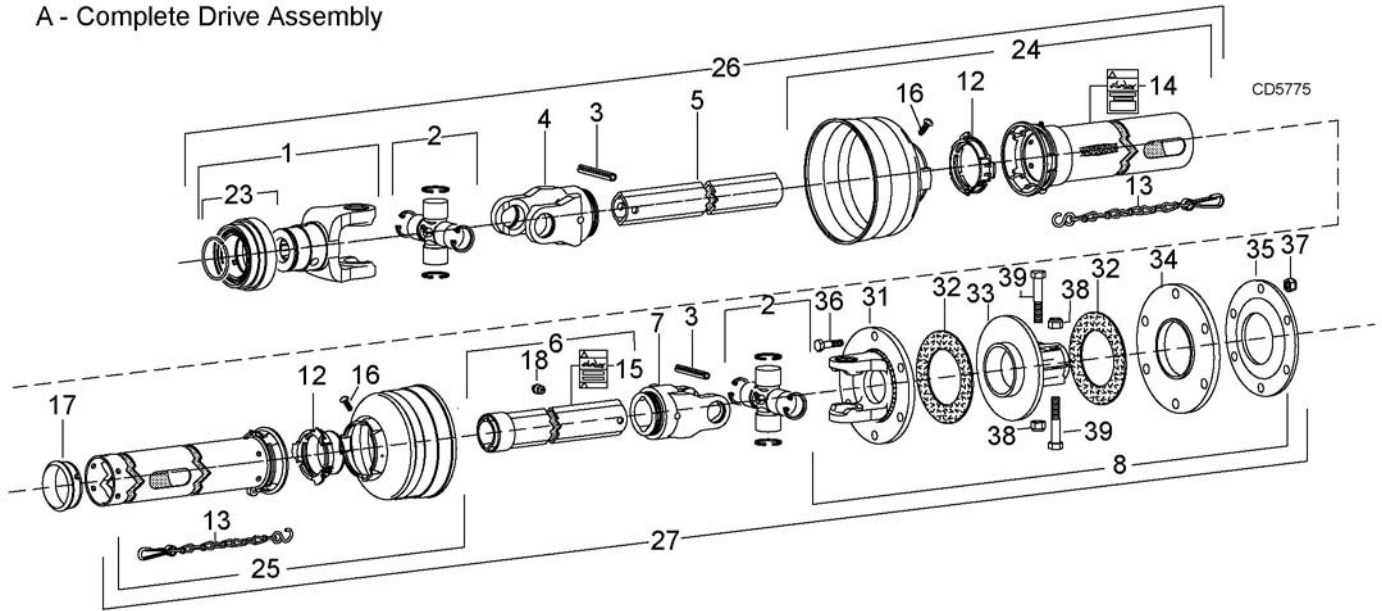
REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
	1009206	1	Complete 540 drive	18	40779	1	Grease fitting
2	110	1	Cross and bearing kit	24	1005792	1	Outer guard half
3	40764	1	Spring pin 10 x 80	25	1005793	1	Inner guard half
4	1005791	1	Male drive half, complete	31	57438	1	Flange yoke
6	40593	1	Outer profile & sleeve	32	57432	2	Friction disc
7	40576	1	Inboard yoke	33	57440	1	Hub, 1-3/4 20-spline
8	57416	2	Friction clutch	34	57434	1	Thrust plate
12	40766	2	Bearing ring	35	57439	1	Belleville spring
13	40777	1	Anti-rotation chain	36	57259	6	M10 x 1.5P x 55 mm Cap screw
14	18864	2	Decal, Danger rotating driveline	37	57260	6	M10 x 1.5P Lock nut w/nylon insert
15	33347	1	Decal, Danger guard missing	38	57261	2	M12 x 1.5P Lock nut w/nylon insert
16	40778	2	Screw	39	57262	2	M12 x 1.5P x 65 mm Cap screw
17	40767	1	Support bearing				

64 Parts

MAN0390 (Rev. 4/6/2007)

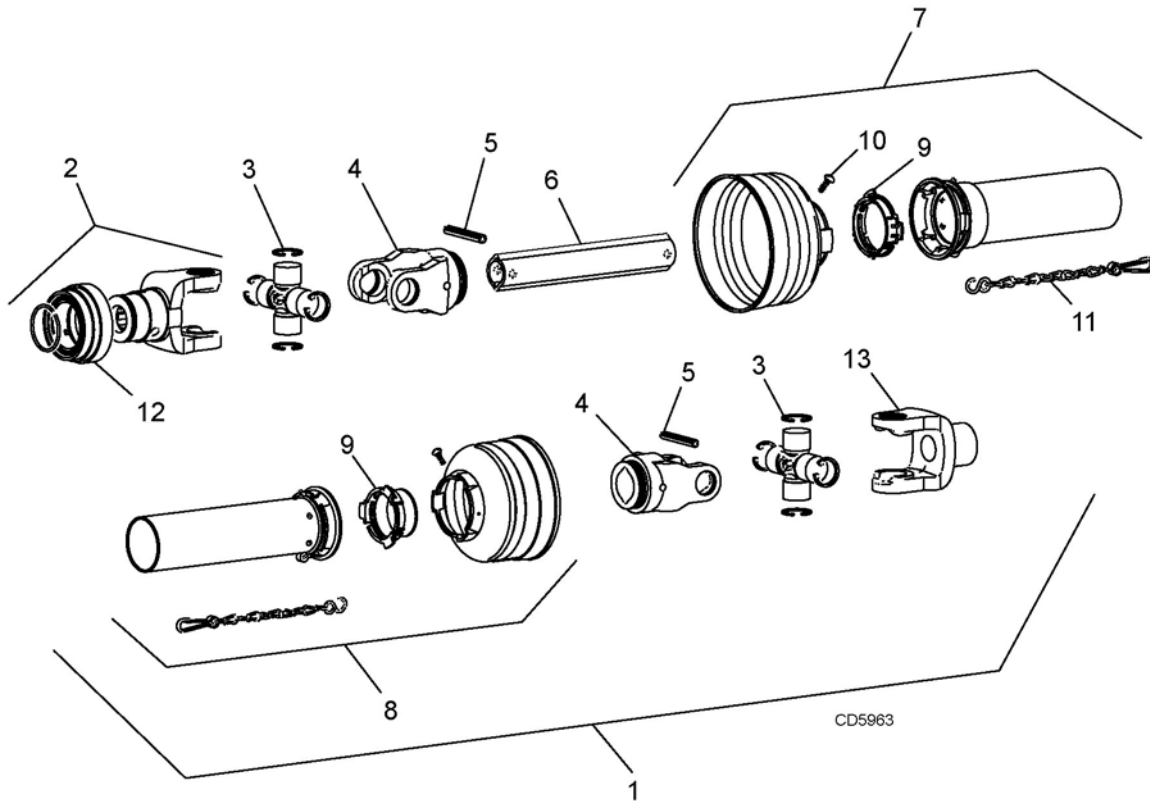
DS96 / DS120 SLIP CLUTCH DRIVE ASSEMBLY

A - Complete Drive Assembly



REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
	1005790	1	Complete 540 Drive assembly (DS96 only)	23	40589	1	Slide collar kit
	57413	1	Complete 540 Drive assembly (DS120 only)	24	1005795	1	Outer guard half (DS96 only)
1	40574	1	Yoke, 1-3/8 Spline ASGE	24	57268	1	Outer guard half (DS120 only)
2	110	2	Cross and bearing	25	1005796	1	Inner guard half (DS96 only)
3	40764	2	Spring pin 10 X 80	25	57269	1	Inner guard half (DS120 only)
4	40575	1	Inboard yoke	26	1005794	1	Shaft asy, male (complete/guard) (DS96 only)
5	40587	1	Inner profile	26	57414	1	Shaft asy, male (complete/guard) (DS120 only)
6	40593	1	Outer profile & sleeve	31	57438	1	Flange yoke
7	40576	1	Inboard yoke	32	57432	2	Friction disc
8	57416	1	Friction clutch 1340, 1-3/4, 20-spline	33	57440	1	Hub, 1-3/4" 20-spline
12	40766	2	Bearing ring SC25	34	57434	1	Thrust plate
13	40777	2	Anti-rotation chain	35	57439	1	Belleville spring
14	18864	1	Decal, Danger rotating driveline	36	57259	6	M10 x 1.5P x 55 mm Cap screw GR8.8
15	33347	1	Decal, Danger guard missing	37	57260	6	M10 x 1.5P Lock nut w/nylon insert
16	40778	2	Screw	38	57261	2	M12 x 1.5P Lock nut w/nylon insert
17	40767	1	Support bearing	39	57262	2	M12 x 1.5P x 65 mm Cap screw GR8.8
18	40779	1	Grease fitting				

DS96 / DS120 3-JOINT DRIVE, FRONT 2/3



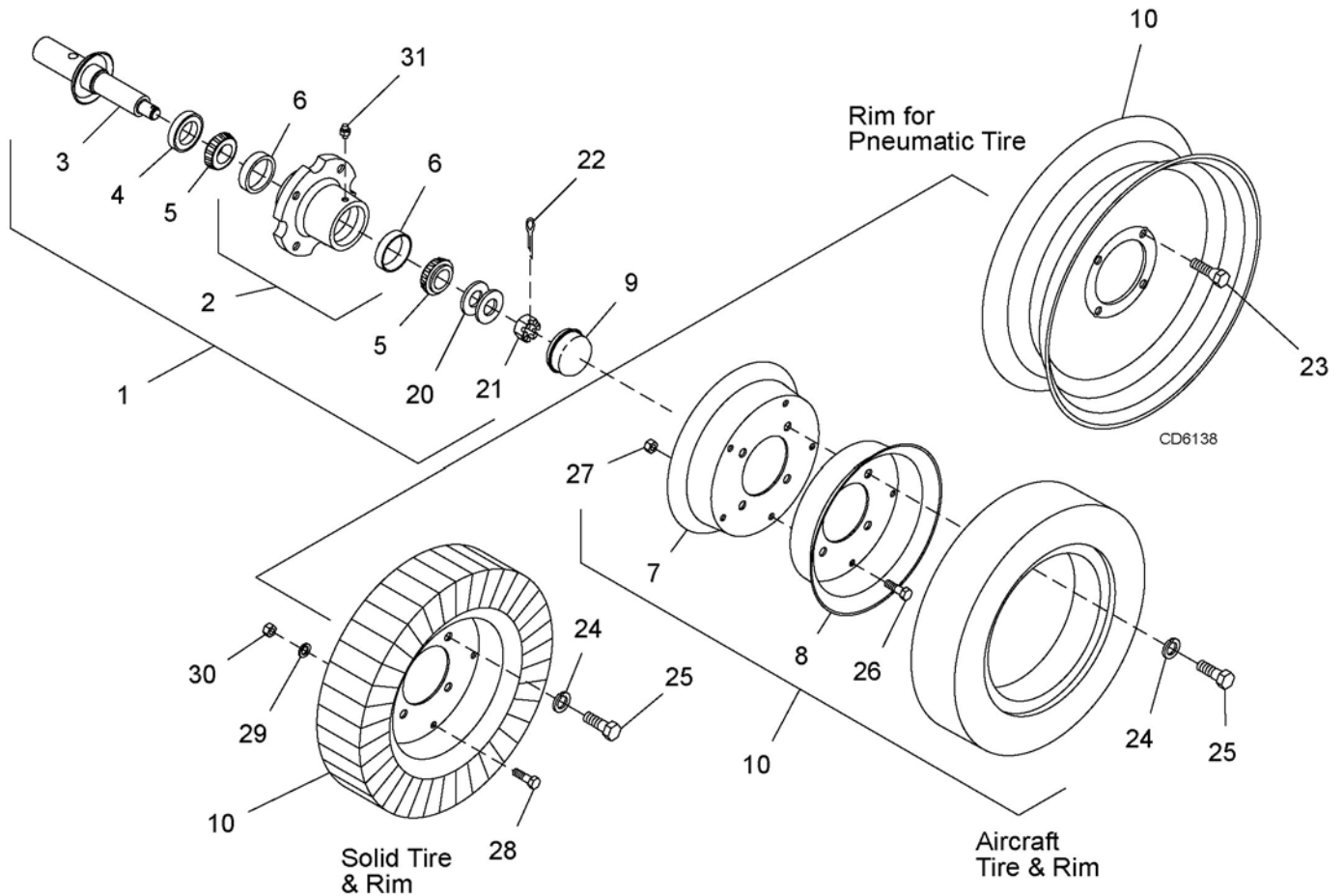
REF	PART	QTY	DESCRIPTION
1	40599	1	Complete drive assembly
2	40574	1	Yoke, 1-3/8 - 6SP (complete with lock collar)
3	110	2	Cross and bearing kit
4	40576	2	Inboard yoke
5	40764	2	Spring pin 10 mm x 80 mm (package of 10)
6	40588	1	Outer profile (cut to length)

REF	PART	QTY	DESCRIPTION
7	40590	1	Guard, outer half, also includes items 9, 10 and 11 (cut to length)
8	40591	1	Guard, inner half, also includes items 9, 10 and 11 (cut to length)
9	40766	2	Bearing ring (package of 2)
10	40778	2	Screw (package of 10)
11	40777	2	Anti-rotation chain
12	40589	1	Lock collar repair kit (without yoke)
13	15308	1	Yoke, 1-3/8 - 6SP clamp type

66 Parts

MAN0390 (Rev. 4/6/2007)

WHEEL & TIRE ASSEMBLY

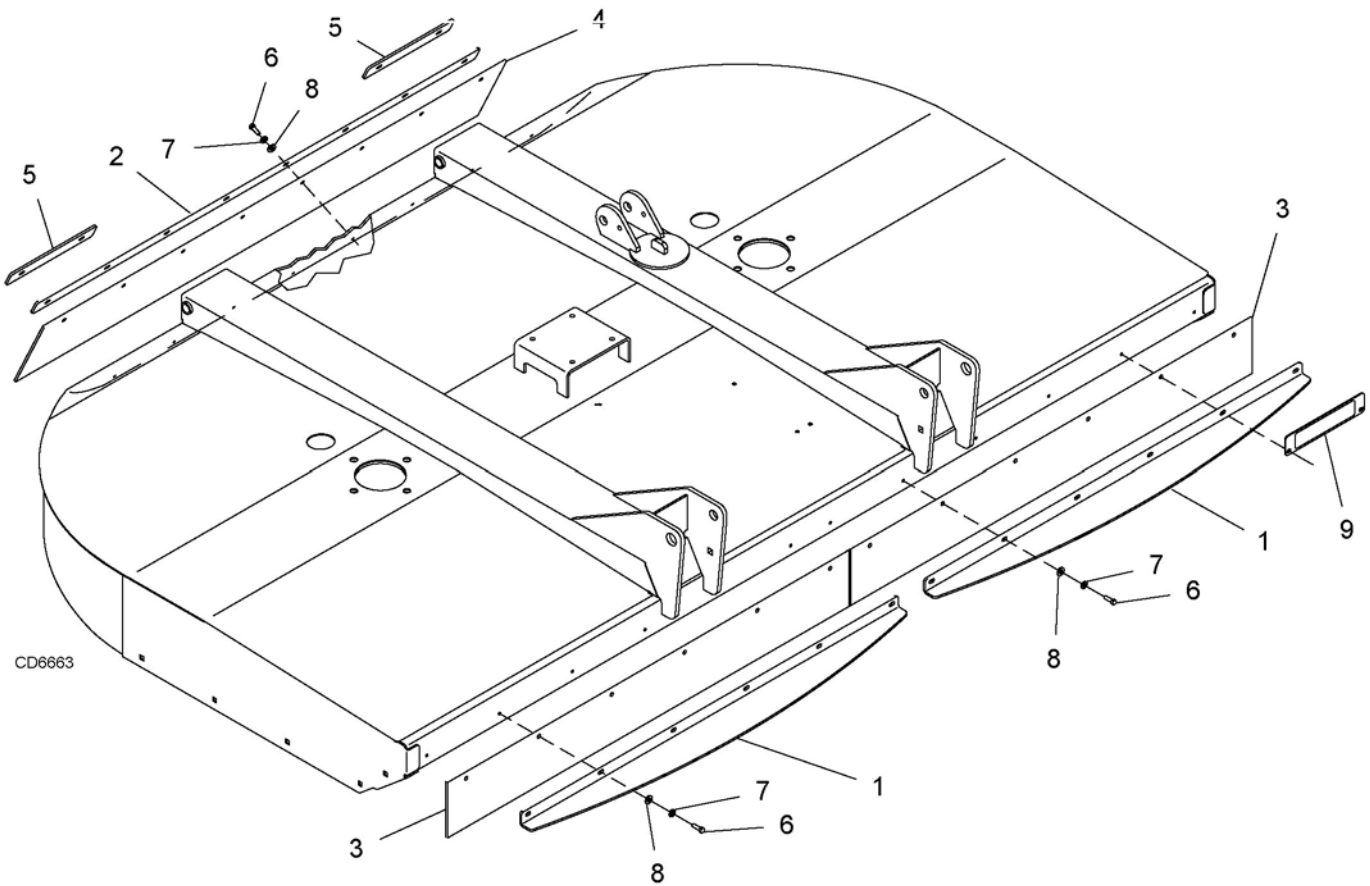


REF	PART	QTY	DESCRIPTION
1	1003492	1	Heavy hub assembly
2	530	1	Heavy wheel hub with cups
3	1003493	1	Axle
4	314	1	Seal for 1-1/2 shaft
5	310	2	Bearing cone
6	309	2	Bearing cup
7	1003411	1	15.0 x 6.0 Rim half (for 29" aircraft wheel only) -or-
7	1003694	1	10.0 x 5.0 Rim half (for 22" aircraft wheel only)
8	1003412	1	15.0 x 6.0 Rim half w/valve hole (for 29" aircraft wheel only) -or-
8	1003693	1	10.0 x 5.0 Rim half w/valve hole (for 22" aircraft wheel only)
9	531	1	Hub cap
10	529	1	15" 4-Hole rim
10	7428	1	6.00 x 9 Solid tire, rim & hardware -or-
10	1003410	1	29 x 9 x 15 Aircraft tire, rim & hardware -or-

REF	PART	QTY	DESCRIPTION
10	1003695	1	22 x 6.6 x 10 Aircraft tire, rim & hardware
20	1257	*	3/4 Standard flat washer
21	5849		3/4 NF Slotted hex nut
22	1256	*	3/16 x 1 Cotter pin
23	1258		1/2 NF x 1-1/8 Wheel bolt
24	855	*	1/2 Extra-heavy lock washer
25	4119		1/2 NF x 1 Cap screw GR5 (solid tire only)
26		*	9-1/6 NC x 1-1/4 Cap screw GR5
27		*	9/16 NC Hex lock nut
28	19887		3/8 NC x 1 Cap screw GR8
29	838	*	3/8 Standard lock washer
30	835	*	3/8 NC Hex nut, plated
31	1972	*	1/4-28 Tapered thread grease fitting

* Standard hardware - obtain locally

DS96 / DS120 BELT SHIELDING



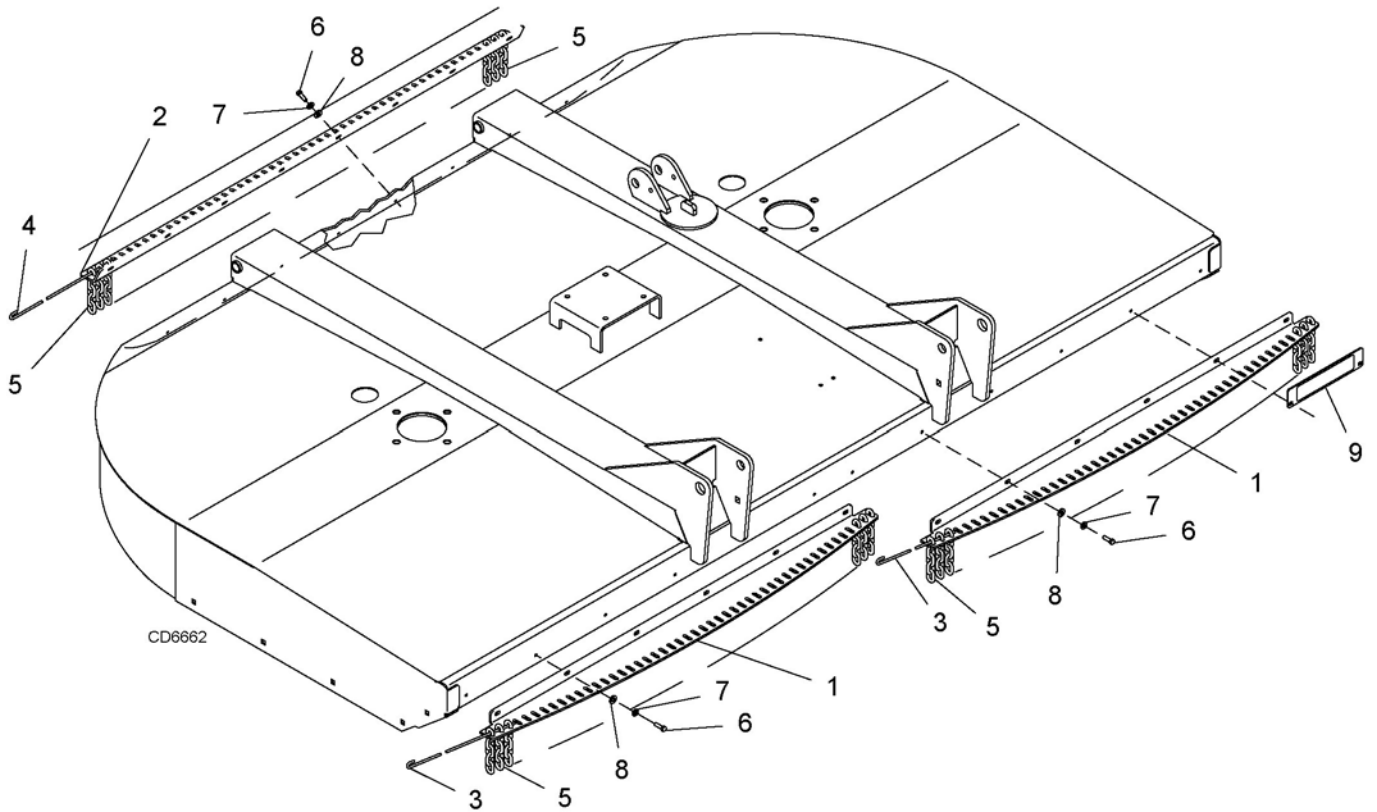
DS96

REF	PART	QTY	DESCRIPTION
1	1013391	2	Front belt bracket
2	1013393	1	Rear belt strap
3	1013392	2	Front rubber deflector
4	1013394	1	Rear rubber deflector
5	1013399	2	Rear belt strap, outer (DS96 only)
6	19446	18*	3/8 x 1-1/4 Type T self-tapping screw
7	838	18*	3/8 Standard lock washer
8	565	18*	3/8 Standard flat washer
9	1009242	1	Front reflector bracket w/reflector
			* Standard Hardware, obtain locally

DS120

REF	PART	QTY	DESCRIPTION
1	1008091	2	Front belt bracket
2	1008093	1	Rear belt strap
3	1008092	2	Front rubber deflector
4	1008094	1	Rear rubber deflector
6	19446	20*	3/8 x 1-1/4 Type T self-tapping screw
7	838	20*	3/8 Standard lock washer
8	565	20*	3/8 Standard flat washer
9	1009242	1	Front reflector bracket w/reflector
			* Standard Hardware, obtain locally

DS96 / DS120 CHAIN SHIELDING (OPTIONAL)



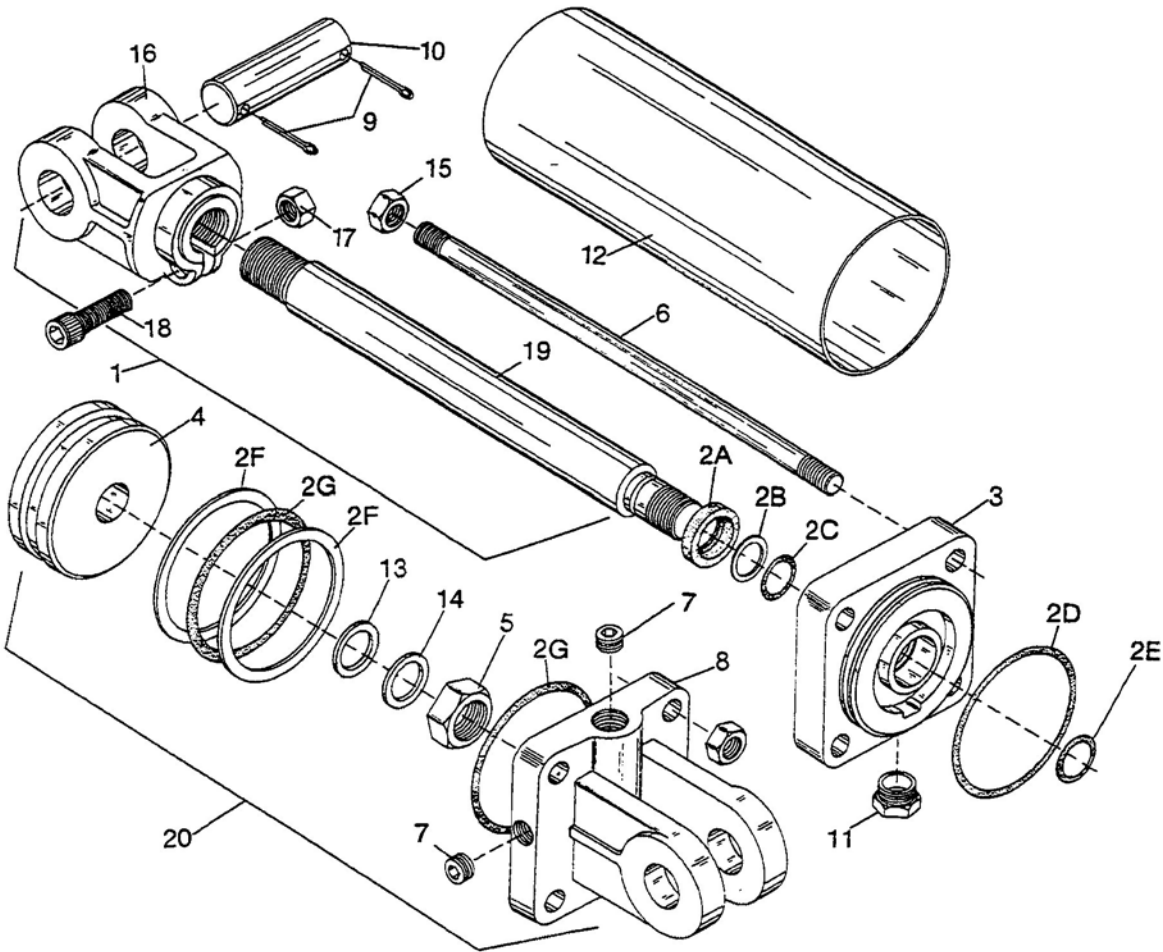
DS96

REF	PART	QTY	DESCRIPTION
1	1009188	2	Front chain shield bracket
2	1009189	1	Rear chain shield bracket
3	1007854	2	Front chain pin
4	1007856	1	Rear chain pin
5	3994	122	5/16 Chain, 5 link
6	19446	18	3/8 x 1-1/4 Type T self-tapping screw
7	838	18*	3/8 Standard lock washer
8	565	18*	3/8 Standard flat washer
9	1009242	1	Front reflector bracket with reflector
			* Standard Hardware, obtain locally

DS120

REF	PART	QTY	DESCRIPTION
1	1008083	2	Front chain shield bracket
2	1008084	1	Rear chain shield bracket
3	1007856	2	Front chain pin
4	1007856	1	Rear chain pin
5	3994	151	5/16 Chain, 5 link
6	19446	20	3/8 x 1-1/4 Type T self-tapping screw
7	838	20*	3/8 Standard lock washer
8	565	20*	3/8 Standard flat washer
9	1009242	1	Front reflector bracket with reflector
			* Standard Hardware, obtain locally

3 X 8" SINGLE-ACTING HYDRAULIC CYLINDER

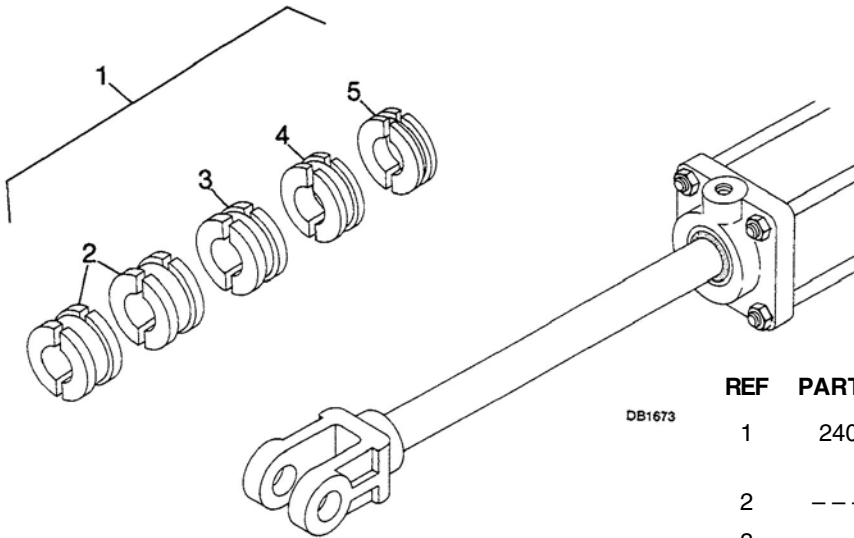


REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
1	N/A		Not available	9			Not used on this cylinder
2	19810	1	Seal Kit, 3 In Hyd Cylinder (includes items 2A thru 2G)	10			Not used on this cylinder
2A	†	1	Wiper seal	11	11893	1	Bushing, Pipe Reducing 1/2 x 1/4
2B			Not used	12	N/A	1	Cylinder barrel
2C	†	2	1-1/4 ID U-Cup	13			Not used on this cylinder
2D	†	2	Barrel O-ring	14			Not used on this cylinder
2E			Not used on this cylinder	15	*	8	Tie rod nut
2F	†	2	Piston back-up washer	16	23549	1	Clevis, Cylinder Rod
2G	†	1	Piston seal O-ring	17	6698 *	1	Nut, Lock 3/8 NC
3	N/A	1	Rod end housing	18	23550 *	1	Screw, SHCS 3/8 NC x 1-1/2
4	N/A	1	Piston	19	N/A	1	Cylinder rod
5	34328	1	Nut, Lock 3/4 NF	20	29547		Cylinder, Hydraulic 3 x 8
6	N/A	4	Cylinder tie rod				* Standard hardware, obtain locally
7	4510 *	1	1/2 Pipe plug				† Included in seal repair kit
8	N/A	1	Cylinder butt end				N/A Not available

70 Parts

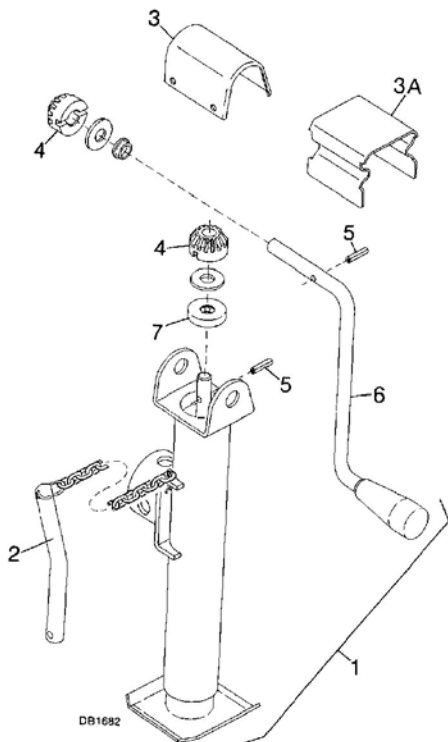
MAN0390 (Rev. 4/6/2007)

HYDRAULIC CYLINDER STROKE CONTROL KIT (OPTIONAL)



REF	PART	QTY	DESCRIPTION
DB1673	1	24098	1 Stroke control set for 1-1/4" cylinder rod (contains items 2 - 5)
	2	----	2 1-1/2" Segment
	3	----	1 1-1/4" Segment
	4	----	1 1" Segment
	5	----	1 3/4" Segment

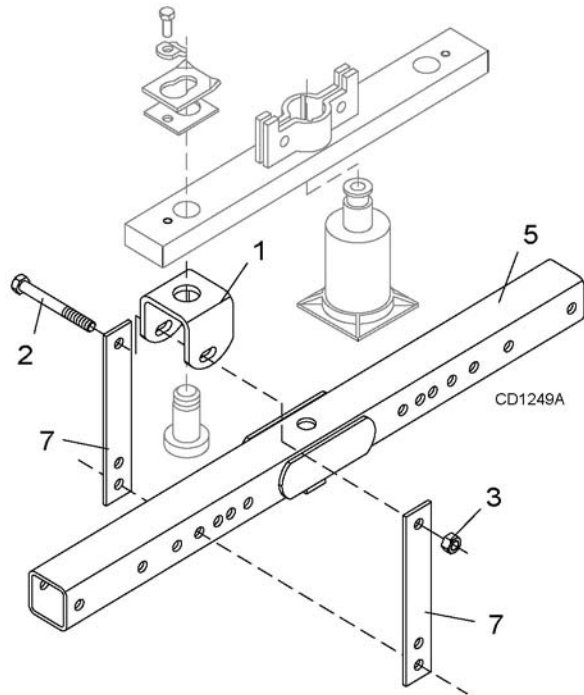
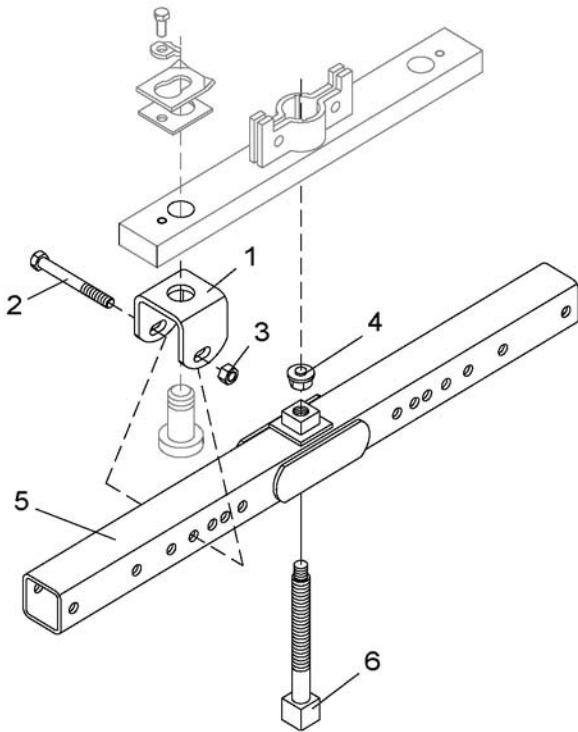
PARKING JACK PULL-TYPE



REF	PART	QTY	DESCRIPTION
1	23790	1	Swivel parking jack
2	25857	1	Jack hitch pin assembly
3		N/S	
3A		N/S	
4	25859	2	15-Tooth bevel gear
5	25860	2	5/32 x 1-1/4 Drive pin
6		N/S	
7	25862	1	Thrust bearing

N/S Not Serviced Separately

CROSSBAR PULLER (OPTIONAL)



REF	PART	QTY	DESCRIPTION
A	8811	1	Crossbar puller, complete
1	19914	2	Crossbar puller clevis
2	3097 *	4	5/8 NC x 4-1/2 Hex head cap screw GR5
3	230 *	4	5/8 NC Hex nut
4	24879	1	Crossbar puller pad assembly

REF	PART	QTY	DESCRIPTION
5	24876	1	Crossbar puller tube assembly
6	24881	1	Crossbar puller screw assembly
7	24885	4	Crossbar puller link

* Standard hardware, obtain locally

BOLT TORQUE CHART

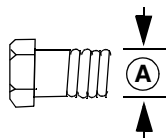
Always tighten hardware to these values unless a different torque value or tightening procedure is listed for a specific application.

Fasteners must always be replaced with the same grade as specified in the manual parts list.

Always use the proper tool for tightening hardware: SAE for SAE hardware and Metric for metric hardware.

Make sure fastener threads are clean and you start thread engagement properly.

All torque values are given to specifications used on hardware defined by SAE J1701 MAR 99 & J1701M JUL 96.



SAE SERIES TORQUE CHART



SAE Grade 2
(No Dashes)

SAE Bolt Head Identification

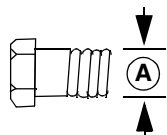


SAE Grade 5
(3 Radial Dashes)



SAE Grade 8
(6 Radial Dashes)

Ⓐ Diameter (Inches)	Wrench Size	MARKING ON HEAD					
		SAE 2		SAE 5		SAE 8	
		lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m
1/4"	7/16"	6	8	10	13	14	18
5/16"	1/2"	12	17	19	26	27	37
3/8"	9/16"	23	31	35	47	49	67
7/16"	5/8"	36	48	55	75	78	106
1/2"	3/4"	55	75	85	115	120	163
9/16"	13/16"	78	106	121	164	171	232
5/8"	15/16"	110	149	170	230	240	325
3/4"	1-1/8"	192	261	297	403	420	569
7/8"	1-5/16"	306	416	474	642	669	907
1"	1-1/2"	467	634	722	979	1020	1383



METRIC SERIES TORQUE CHART



Metric
Grade 8.8

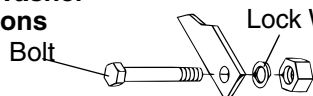
Metric Bolt Head Identification



Metric
Grade 10.9

Ⓐ Diameter & Thread Pitch (Millimeters)	Wrench Size	COARSE THREAD				FINE THREAD				Ⓐ Diameter & Thread Pitch (Millimeters)
		MARKING ON HEAD								
		Metric 8.8		Metric 10.9		Metric 8.8		Metric 10.9		
		N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	N-m	lbs-ft	
6 x 1.0	10 mm	8	6	11	8	8	6	11	8	6 x 1.0
8 x 1.25	13 mm	20	15	27	20	21	16	29	22	8 x 1.0
10 x 1.5	16 mm	39	29	54	40	41	30	57	42	10 x 1.25
12 x 1.75	18 mm	68	50	94	70	75	55	103	76	12 x 1.25
14 x 2.0	21 mm	109	80	151	111	118	87	163	120	14 x 1.5
16 x 2.0	24 mm	169	125	234	173	181	133	250	184	16 x 1.5
18 x 2.5	27 mm	234	172	323	239	263	194	363	268	18 x 1.5
20 x 2.5	30 mm	330	244	457	337	367	270	507	374	20 x 1.5
22 x 2.5	34 mm	451	332	623	460	495	365	684	505	22 x 1.5
24 x 3.0	36 mm	571	421	790	583	623	459	861	635	24 x 2.0
30 x 3.0	46 mm	1175	867	1626	1199	1258	928	1740	1283	30 x 2.0

Typical Washer Installations



Lock Washer

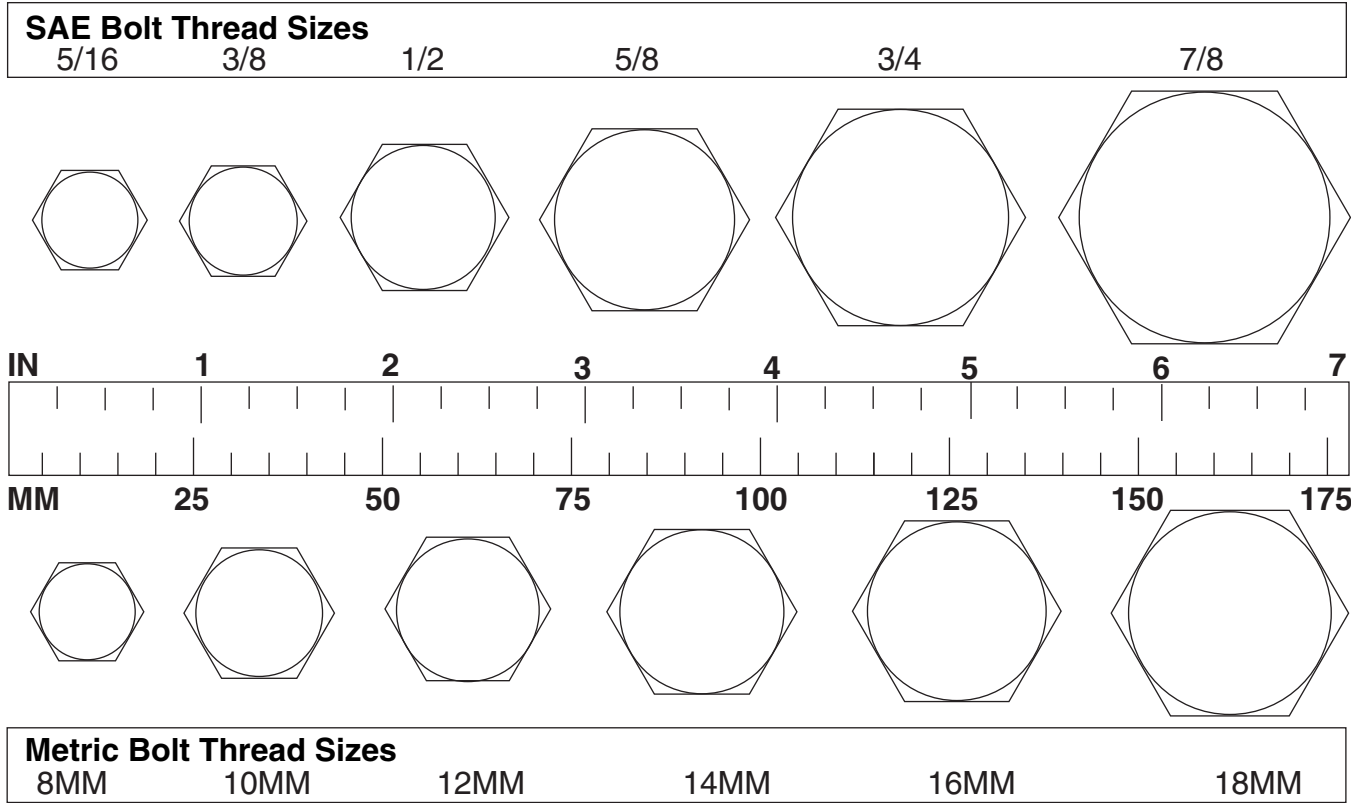
Flat Washer



8/9/00

BOLT SIZE CHART

NOTE: Chart shows bolt thread sizes and corresponding head (wrench) sizes for standard SAE and metric bolts.



ABBREVIATIONS

AG Agriculture
 ASABE American Society of Agricultural & Biological Engineers (formerly ASAE)
 ASAE..... American Society of Agricultural Engineers
 ATF.....Automatic Transmission Fluid
 BSPP..... British Standard Pipe Parallel
 BSPTM..... British Standard Pipe Tapered Male
 CV Constant Velocity
 CCW..... Counter-Clockwise
 CW Clockwise
 F Female
 FT..... Full Thread
 GA Gauge
 GR (5, etc.)..... Grade (5, etc.)
 HHCS Hex Head Cap Screw
 HT Heat-Treated
 JIC..... Joint Industry Council 37° Degree Flare
 LH..... Left Hand
 LT Left
 m Meter
 mm Millimeter
 M Male

MPa Mega Pascal
 N Newton
 NC..... National Coarse
 NF National Fine
 NPSM National Pipe Straight Mechanical
 NPT.....National Pipe Tapered
 NPT SWF..... National Pipe Tapered Swivel Female
 ORBM O-Ring Boss - Male
 P Pitch
 PBY.....Power-Beyond
 psi Pounds per Square Inch
 PTO.....Power Take Off
 QD Quick Disconnect
 RH..... Right Hand
 ROPS..... Roll-Over Protective Structure
 RPM.....Revolutions Per Minute
 RT Right
 SAE..... Society of Automotive Engineers
 UNC Unified Coarse
 UNF Unified Fine
 UNS Unified Special

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WARRANTY

All Models Except Mow'n Machine™ Zero-Turn Mowers

Please Enter Information Below and Save for Future Reference.

Date Purchased: _____ From (Dealer): _____

Model Number: _____ Serial Number: _____

Woods Equipment Company ("WOODS") warrants this product to be free from defect in material and workmanship. Except as otherwise set forth below, the duration of this Warranty shall be for TWELVE (12) MONTHS COMMENCING ON THE DATE OF DELIVERY OF THE PRODUCT TO THE ORIGINAL PURCHASER.

All current model loaders and backhoes are warranted for two (2) years from the date of delivery to the original purchaser.

The warranty periods for specific parts or conditions are listed below:

Part or Condition Warranted	Model Number	Duration (from date of delivery to the original purchaser)
Gearbox Seals	All units listed below	2 years
Gearbox components	BW1260, BW1620, BW1800, BW2400	8 years
	BW240HD, BW180HD, BW180HB, BW126HB	7 years
	BB48X, BB60X, BB72X, BB84X, BB600X, BB720X, BB840X, BB6000X, BB7200X, BB8400X, DS1260, DSO1260, DS1440, TS1680, BW126-3, BW180-3, BW240	6 years
	PHD25, PHD35, PHD65, PHD95, 2162, 3240, DS96, DS120, RCC42, RM550-2, RM660-2, RD990X, PRD6000, PRD7200, PRD8400, S15CD, S20CD, S22CD, S25CD, S27CD, BW180LH, TC/R74, TC/R68, TC/R60, TBW144, TBW180, TBW204	5 years
	RDC54, RD60, RD72, TBW150C, TS/R60, TS/R52, TS/R44	3 years (1 year if used in rental or commercial applications)
Blade spindles	RM550-2, RM660-2, RD990X, PRD6000, PRD7200, PRD8400, TBW144, TBW180, TBW204	3 years
Rust-through	BB600, BB720, BB840, BB6000, BB7200, BB8400, BW126-3, BW126HB, BW180-3, BW180HB, BW180HD, BW1260, BW1800, BW240, BW240HD, 2162, 3240, DS1260, DSO1260, DS1440, TS1680	10 years

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not apply in the event that the product has been materially modified or repaired by someone other than WOODS, a WOODS authorized dealer or distributor, and/or a WOODS authorized service center. This Warranty does not cover normal wear or tear, or normal maintenance items. This Warranty also does not cover repairs made with parts other than those obtainable through WOODS.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

WOODS makes no warranty, express or implied, with respect to engines, batteries, tires or other parts or accessories not manufactured by WOODS. Warranties for these items, if any, are provided separately by their respective manufacturers.

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS receives the product. **THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.**

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. WOODS MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AND WOODS SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY AND/OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

WOODS shall not be liable for any incidental or consequential losses, damages or expenses, arising directly or indirectly from the product, whether such claim is based upon breach of contract, breach of warranty, negligence, strict liability in tort or any other legal theory. Without limiting the generality of the foregoing, Woods specifically disclaims any damages relating to (i) lost profits, business, revenues or goodwill; (ii) loss of crops; (iii) loss because of delay in harvesting; (iv) any expense or loss incurred for labor, supplies, substitute machinery or rental; or (v) any other type of damage to property or economic loss.

This Warranty is subject to any existing conditions of supply which may directly affect WOODS' ability to obtain materials or manufacture replacement parts.

No agent, representative, dealer, distributor, serviceperson, salesperson, or employee of any company, including without limitation, WOODS, its authorized dealers, distributors, and service centers, is authorized to alter, modify, or enlarge this

Warranty. Answers to any questions regarding warranty service and locations may be obtained by contacting: **ALITEC™**

Woods Equipment Company

2606 South Illinois Route 2
Post Office Box 1000
Oregon, Illinois 61061 USA

800-319-6637 tel
800-399-6637 fax
www.WoodsEquipment.com



BMP®
CENTRAL FABRICATORS®
GANNON®
GILL®
WAIN-ROY®
WOODS®



WARRANTY

(Replacement Parts For All Models Except Mow'n Machine™
Zero-Turn Mowers and Woods Boundary™ Utility Vehicles)

Woods Equipment Company ("WOODS") warrants this product to be free from defect in material and workmanship for a period of ninety (90) days from the date of delivery of the product to the original purchaser with the exception of V-belts, which will be free of defect in material and workmanship for a period of 12 months.

Under no circumstances will this Warranty apply in the event that the product, in the good faith opinion of WOODS, has been subjected to improper operation, improper maintenance, misuse, or an accident. This Warranty does not cover normal wear or tear, or normal maintenance items.

This Warranty is extended solely to the original purchaser of the product. Should the original purchaser sell or otherwise transfer this product to a third party, this Warranty does not transfer to the third party purchaser in any way. There are no third party beneficiaries of this Warranty.

WOODS' obligation under this Warranty is limited to, at WOODS' option, the repair or replacement, free of charge, of the product if WOODS, in its sole discretion, deems it to be defective or in noncompliance with this Warranty. **The product must be returned to WOODS with proof of purchase within thirty (30) days after such defect or noncompliance is discovered or should have been discovered, routed through the dealer and distributor from whom the purchase was made, transportation charges prepaid.** WOODS shall complete such repair or replacement within a reasonable time after WOODS receives the product. THERE ARE NO OTHER REMEDIES UNDER THIS WARRANTY. THE REMEDY OF REPAIR OR REPLACEMENT IS THE SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

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This Warranty is subject to any existing conditions of supply which may directly affect WOODS' ability to obtain materials or manufacture replacement parts.

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